COMMONWEALTH of VIRGINIA
DEPARTMENT OF ENVIRONMENTAL QUALITY
DRAFT PERMIT
TO WITHDRAW GROUNDWATER IN THE EASTERN VIRGINIA GROUNDWATER MANAGEMENT AREA

Permit Number: GW0040102
Effective Date: Xxxxxxx XX, 2023
Expiration Date: Xxxxxxx XX, 2038

Pursuant to the Ground Water Management Act of 1992 (Section 62.1-254 et seq. of the Code of Virginia) and the Groundwater Withdrawal Regulations (Regulations) (9VAC25-610), the Department of Environmental Quality hereby authorizes the Permittee to withdraw and use groundwater in accordance with this permit.

Permittee Virginia Department of Corrections

Facility St. Brides Correctional Center

Facility Address 701 Sanderson Road

Chesapeake, VA 23328

The Permittee's authorized groundwater withdrawal shall not exceed:

122,000,000 gallons per year,
13,000,000 gallons per month,

The permitted withdrawal will be used to provide potable domestic water for inmates, officers, and staff at the correctional centers, as well as for the fire suppression system, water treatment and facilities maintenance. Other uses are not authorized by this permit.

The Permittee shall comply with all conditions and requirements of the permit.

By direction of the Department of Environmental Quality, this Permit is granted by:

Signed_____ Date _____

Scott Morris, DBA, P.E.
Director, Water Division

This permit is based on the Permittee's application submitted on June 7, 2021, and subsequently amended to include supplemental information provided by the Permittee. The following are conditions that govern the system set-up and operation, monitoring, reporting, and recordkeeping pertinent to the Regulations.

Part I
Operating Conditions

A. Authorized Withdrawal

1. The withdrawal of groundwater shall be limited to the following wells identified in the table below. Withdrawals from wells not included in Table 1 are not authorized by this permit and are therefore prohibited. 9VAC25-610-140 A

Table 1

Owner Well Name	DEQ Well #	Well Depth (ft bls)	Screen Intervals (ft bls)	Aquifer	Latitude	Longitude	Datum
Well #3	234-00203	150	120-150	Yorktown-Eastover	36° 36' 48.7764"	-76° 10' 57.4176"	WGS84
Well #4	234-00239	155	115-125, 125-145	Yorktown-Eastover	36° 36' 42.8832"	-76° 10' 46.9236"	WGS84

2. Any actions that result in a change to the status, construction, or pump intake setting of wells included in this permit must be pre-approved by the Department of Environmental Quality (Department or DEQ) in writing prior to implementing the change and a revised GW-2 Form must be submitted to the Department within 30 days after the physical construction of a well is altered or the pump intake setting has been changed. If changes are a result of an emergency, notify the Department within 5 days from the change. 9VAC25-610-140 C

B. Public Water Supplies

1. Daily withdrawal limits set forth in this permit are consistent with the requirements and conditions of the Virginia Department of Health (VDH) Waterworks Operation Permit #3550750. 9VAC25-610-140 A 5

2. The Permittee shall submit copies of an updated Waterworks Operation Permit and the associated Engineering Description Sheets to the Department within 30 days of receipt from the Virginia Department of Health. 9VAC25-610-140 C

C. Pump Intake Settings

1. The Permittee shall not place a pump or water intake device lower than the top of the uppermost confined aquifer that a well utilizes as a groundwater source or lower than the bottom of an unconfined aquifer that a well utilizes as a groundwater source in order to prevent dewatering of the aquifer, loss of inelastic storage, or damage to the aquifer from compaction. 9VAC25-610-140 A 6

2. Pump settings in individual wells are limited as follows. Any change in the pump setting must receive prior approval by the Department.

Owner Well Name	DEQ Well #	Max Pump Setting (feet below land surface)
Well #3	234-00203	105
Well #4	234-00239	105

D. Reporting

1. Water withdrawn from each well shall be recorded monthly at the end of each month and reported to the Department, in paper or electronic format, on a form provided by the Department by the tenth (10^{th}) day of each January, April, July and October for the respective previous calendar quarter. Records of water use shall be maintained by the Permittee in accordance with Part III.F, 1 through 5 of this permit. 9VAC25-610-140 A 9

2. The Permittee shall report any amount in excess of the permitted withdrawal limit by the fifth (5th) day of the month following the month when such a withdrawal occurred. Failure to report may result in compliance or enforcement activities. 9VAC25-610-140 C

3. Reporting requirements contained in Part II.A. and Part II.B. require water quality monitoring and water level monitoring. The reports required by those conditions shall be submitted in conjunction with the records required above.

4. The following is a summary of reporting requirements for specific facility wells:

Owner Well Name	DEQ Well #	Reporting Requirements
Well #3	234-00203	Water Use, Water Quality
MW-4	234-00238	Water Level

E. Water Conservation and Management Plan

1. The Water Conservation and Management Plan (WCMP) submitted in the application received June 7, 2021 and subsequently amended and then approved by the Department is incorporated by reference into this permit and shall have the same effect as any condition contained in this permit and may be enforced as such.

2. By the end of the first year of the permit cycle [*date*] the Permittee shall submit documentation to the Department that the leak detection and repair program defined in the WCMP has been initiated. This documentation shall include activities completed during the first year of the permit term. 9VAC25-610-100 B

3. As soon as completed but not later than the end of the second year of the permit cycle [*date*] the Permittee shall submit to the Department results of an audit of the total amount of groundwater used in the distribution system and operational processes. This documentation shall include any resulting changes to the leak detection and repair program in the WCMP. 9VAC25-610-100 B

4. A report on the plan's effectiveness in reducing water use, including revisions to those elements of the WCMP that can be improved and addition of other elements found to be effective based on

operations to date shall be submitted by the end of years five [*date*] and ten [*date*] of the permit term. These reports shall include as appropriate: 9VAC25-610-140 C

a. Any new water saving equipment installed or water saving processes adopted;

b. WCMP actions taken to reduce the volume of water needed to supply the system;

c. Planned short or long term efforts and actions to be added to the WCMP to improve the efficiency of water use in the system or by customers and for reducing the loss of water;

d. Results of additional water audits completed;

e. Review of water use category (residential, commercial, industrial) per-connection use in municipal systems;

f. Evaluation of the leak detection and repair program;

g. Description of educational activities completed; and

h. Identification of any water reuse opportunities identified.

5. If revisions or additions to the plan are necessary, an updated WCMP shall be submitted to the Department for approval along with the report prior to implementation of the revised plan.

6. Records of activities conducted pursuant to the WCMP are to be submitted to the Department upon request.

F. Mitigation Plan

The Mitigation Plan approved on March 9, 2023 by the Department is incorporated by reference into this permit and shall have the same effect as any condition contained in this permit and may be enforced as such. 9VAC25-610-110 D 3 g

G. Well Tags

1. Each well that is included in this permit shall have affixed to the well casing, in a prominent place, a permanent well identification plate that records, at a minimum, the Department well identification number, the groundwater withdrawal permit number, the total depth of the well, and the screened intervals in the well. Such well identification plates shall be in a format specified by the Department and are available from the Department. 9VAC25-610-140 A 12

2. Well tags shall be affixed to the appropriate well casing within 30 days of receiving the tags from the Department. The accompanying well tag installation certification form shall be returned to the Department within 60 days of receipt of the tags. 9VAC25-610-140 C

Part II
Special Conditions

Pursuant to 9VAC25-610-140 B and C, the following Special Conditions apply to this permit in order to protect the public welfare, safety, and health or conserve, protect and help ensure the beneficial use of groundwater.

A. Water Quality Monitoring

1. The following water quality parameters shall be monitored prior to any treatment as specified below:

Owner Well Name	DEQ Well #	Parameter	Units	Frequency	Test Method
Well #3	234-00203	chloride, sulfate, alkalinity, fluoride, calcium, magnesium, zinc, sodium, iron, potassium (a)	mg/L	1 per 3 Months (b)	(c)

(a) The sample shall also be analyzed for an anion-cation balance, as described in Part 1030 F.1 of "Standard Methods for the Examination of Water and Wastewater".

(b) "1 per 3 Months" means one sample taken every February, May, August, and November, to be submitted as part of the quarterly Groundwater Withdrawal Report due no later than April 10th, July 10th, October 10th, and January 10th respectively.

(c) Any approved method presented in 40 CFR Part 136.

2. Prior to collecting the sample, the well shall be pumped sufficiently to withdraw at least three well volumes and the pH, temperature, and conductivity of the discharge shall be stabilized.
3. Records of groundwater quality sampling results, including documentation of pH, temperature, and conductivity stabilization prior to sampling, shall be maintained by the permittee as required in 9VAC25-610-130 F.
4. See Parts III.F and III.G of this permit for additional monitoring and reporting requirements.

B. Water Level Monitoring

A continuous water level recording instrument shall be maintained on the monitoring well (DEQ Well #234-00238) completed in the Yorktown Eastover Aquifer. Daily low water level records shall be submitted quarterly with the withdrawal reports required in Condition D.1. of Part I Operating Conditions. Records of groundwater levels shall be maintained by the Permittee as required in 9VAC25-610-130 F.

Part III
General Conditions

A. Duty to Comply

The Permittee shall comply with all conditions of the permit. Nothing in this permit shall be construed to relieve the permit holder of the duty to comply with all applicable federal and state statutes, regulations and prohibitions. Any permit violation is a violation of the law and is grounds for enforcement action, permit termination, revocation, modification, or denial of a permit application. 9VAC25-610-130 A

B. Duty to Cease or Confine Activity

It shall not be a defense for a Permittee in an enforcement action that it would have been necessary to halt or reduce the activity for which a permit has been granted in order to maintain compliance with the conditions of the permit. 9VAC25-610-130 B

C. Duty to Mitigate

The Permittee shall take all reasonable steps to avoid all adverse impacts that may result from this withdrawal as defined in 9VAC25-610-10 and provide mitigation of the adverse impact when necessary as described in 9VAC25-610-110 D 3 g and 9VAC25-610-130 C.

D. Inspection, Entry, and Information Requests

Upon presentation of credentials, the Permittee shall allow the Department, or any duly authorized agent of the Department, at reasonable times and under reasonable circumstances, to enter upon the Permittee's property, public or private, and have access to, inspect and copy any records that must be kept as part of the permit conditions, and to inspect any facilities, well(s), water supply system, operations, or practices (including sampling, monitoring and withdrawal) regulated or required under the permit. For the purpose of this section, the time for inspection shall be deemed reasonable during regular business hours. Nothing contained herein shall make an inspection time unreasonable during an emergency. 9VAC25-610-130 D

E. Duty to Provide Information

The Permittee shall furnish to the Department, within a reasonable time, any information that the Department may request to determine whether cause exists for modifying or revoking, reissuing, or terminating the permit, or to determine compliance with the permit. The Permittee shall also furnish to the Department, upon request, copies of records required to be kept by regulation or this permit. 9VAC25-610-130 E

F. Monitoring and Records Requirements

1. The Permittee shall maintain a copy of the permit on-site and/or shall make the permit available upon request. 9VAC25-610-130 E

2. Monitoring of parameters shall be conducted according to approved analytical methods as specified in the permit. 9VAC25-610-130 F 1

3. Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity. 9VAC25-610-130 F 2

4. The Permittee shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart or electronic recordings for continuous monitoring instrumentation, copies of all reports required by the permit, and records of all data used to complete the application for the permit, for a period of at least three years from the date of the expiration of a granted permit. This period may be extended by request of the Department at any time. 9VAC25-610-130 F 3

5. Records of monitoring information shall include as appropriate: 9VAC25-610-130 F 4

    a. the date, exact place and time of sampling or measurements;

    b. the name(s) of the individual(s) who performed the sampling or measurements;

    c. the date the analyses were performed;

    d. the name(s) of the individual(s) who performed the analyses;

    e. the analytical techniques or methods supporting the information, such as observations, readings, calculations and bench data used;

    f. the results of such analyses; and

    g. chain of custody documentation.

G. Environmental Laboratory Certification

The Permittee shall comply with the requirement for certification of laboratories conducting any tests, analyses, measurements, or monitoring required pursuant to the State Water Control Law (§ 62.1-44.2 et seq. of the Code of Virginia), Environmental Laboratory Certification Program (§ 2.2-1105 et seq. of the Code of Virginia), Certification for Noncommercial Environmental Laboratories (1VAC30-45), and/or Accreditation for Commercial Environmental Laboratories (1VAC30-46), and

1. Ensure that all samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity.

2. Conduct monitoring according to procedures approved under 40CFR Part 136 or alternative methods approved by the U.S. Environmental Protection Agency.

3. Periodically calibrate and perform maintenance procedures on all monitoring and analytical instrumentation at intervals that will ensure accuracy of measurements. 1VAC30-45-20

H. Future Permitting Actions

1. A permit may be modified or revoked as set forth in Part VI of the Groundwater Withdrawal Regulations. 9VAC25-610-290 and 9VAC25-610-130 G

2. If a Permittee files a request for permit modification or revocation, or files a notification of planned changes, or anticipated noncompliance, the permit terms and conditions shall remain effective until the Department makes a final case decision. This provision shall not be used to extend the expiration date of the effective permit. 9VAC25-610-130 G

3. Permits may be modified or revoked upon the request of the Permittee, or upon Department initiative, to reflect the requirements of any changes in the statutes or regulations. 9VAC25-610-130 G

4. The Permittee shall schedule a meeting with the Department prior to submitting a new, expanded or modified permit application. 9VAC25-610-85

5. A new permit application shall be submitted 270 days prior to the expiration date of this permit, unless permission for a later date has been granted by the Department, to continue a withdrawal greater than or equal to 300,000 gallons in any month while an application for a renewal is being processed. 9VAC25-610-96

6. A new permit application shall be submitted 270 days prior to any proposed modification to this permit that will (i) result in an increase of withdrawal above permitted limits; or (ii) violate the terms and conditions of this permit. 9VAC25-610-96

7. The applicant shall provide all information described in 9VAC25-610-94 for any reapplication. 9VAC25-610-96 C

8. The Permittee must notify the Department in writing of any changes to owner and facility contact information within 30 days of the change. 9VAC25-610-140 C

I. Metering and Equipment Requirements

1. Each well and/or impoundment or impoundment system shall have an in-line totalizing flow meter to read gallons, cubic feet, or cubic meters installed prior to beginning the permitted use. Meters shall produce volume determinations within plus or minus 10% of actual flows. An alternative method for determining flow may be approved by the Department on a case-by-case basis. 9VAC25-610-140 A 7 b

    a. A defective meter or other device must be repaired or replaced within 30 days.

    b. A defective meter is not grounds for not reporting withdrawals. During any period when a meter is defective, generally accepted engineering methods shall be used to estimate withdrawals. The period during which the meter was defective must be clearly identified in the groundwater withdrawal report required by Part I, Subsection D of this permit.

2. Each well shall be equipped in a manner such that water levels can be measured during pumping and

non-pumping periods without dismantling any equipment. Any opening for tape measurement of water levels shall have an inside diameter of at least 0.5 inches and be sealed by a removable plug or cap. The Permittee shall provide a tap for taking raw water samples from each permitted well. 9VAC25-610-140 A 7 e

J. Minor Modifications

1. A minor modification to this permit must be made to replace an existing well(s) or add an additional well(s) provided that the well(s) is screened in the same aquifer(s) as the existing well(s), and is in the near vicinity of the existing well(s), the total groundwater withdrawal does not increase, the area of impact does not increase, and the well has been approved by the Department prior to construction. 9VAC25-610-330 B 4 and B 5

2. A minor modification to this permit must be made to combine withdrawals governed by multiple permits when the systems are physically connected as long as interconnection will not result in additional groundwater withdrawal and the area of impact will not increase. 9VAC25-610-330 B 6

3. Minor modifications to this permit must also be made to:

    a. Change an interim compliance date up to 120 days from the original compliance date, as long as the change does not interfere with the final compliance date. 9VAC25-610-330 B 7

    b. Allow for change in ownership when the Department determines no other change in the permit is necessary and the appropriate written agreements are provided in accordance with the transferability of permits and special exceptions. 9VAC25-610-320 and 9VAC25-610-330 B 8

    c. Revise a Water Conservation and Management Plan to update conservation measures being implemented by the Permittee that increase the amount of groundwater conserved. 9VAC25-610-330 B 9

K. Well Construction

At least two weeks prior to the scheduled construction of any well(s), the Permittee shall notify the Department of the construction timetable and receive prior approval of the well(s) location(s) and acquire the Department Well number (DEQ Well #). All wells shall be constructed in accordance with the following requirements.

1. A well site approval letter or well construction permit must be obtained from the Virginia Department of Health prior to construction of the well. 9VAC25-610-130 A

2. A complete suite of geophysical logs (16"/64" Normal, Single Point, Self-Potential, Lateral, and Natural Gamma) shall be completed for the well and submitted to the Department along with the corresponding completion report. 9VAC25-610-140 C

3. The Permittee shall evaluate the geophysical log and driller’s log information to estimate the top of the target aquifer and; therefore, a depth below which the pump shall not be set. The Permittee's determination of the top of the target aquifer shall be submitted to the Department for review and

approval, or approved on site by the Department's Groundwater Characterization staff, prior to installation of any pump. 9VAC25-610-140 A 6

4. The Permittee shall install gravel packs and grout in a manner that prevents leakance between aquifers. Gravel pack shall be terminated close to the top of the well screen(s) and shall not extend above the top of the target aquifer. 9VAC25-610-140 C

5. A completed GW-2 Form and any additional water well construction documents shall be submitted to the Department within 30 days of the completion of any well and prior to the initiation of any withdrawal from the well. The assigned Department Well number shall be included on all well documents. 9VAC25-610-140 C

6. In addition to the above requirements, if required by the permit, construction of a Water Level Monitoring State Observation Well (SOW) requires:

    a. The Permittee shall coordinate activities with the Department's Groundwater Characterization Program (GWCP) to determine the appropriate observation well location and construction schedule, along with the needed screen interval(s), and other completion details following review of geophysical logging. 9VAC25-610-140 C

    b. Prior to preparation of bid documents for construction of the observation well, the Permittee shall notify the Department and shall include any GWCP requirements in the bid documents. At a minimum, the Department will require a pre-bid meeting with interested drilling contractors and a pre-construction meeting with the successful bidder. 9VAC25-610-140 C

    c. Instrumentation to meet the requirements for real-time data transmission consistent with the State Observation Well Network shall be purchased by the Permittee. The Permittee shall submit a purchase order based on the Department's equipment specifications for review and approval prior to purchase of the equipment. The Permittee shall install the real-time equipment infrastructure with Department oversight. The Department will conduct the installation of the transducer and final hook-up of the equipment. 9VAC25-610-140 C

7. In addition to the above requirements, if required by the permit, construction of a Chloride Monitoring SOW requires:

    a. The Permittee shall coordinate activities with the Department's Groundwater Characterization Program (GWCP) to determine the appropriate observation well location and construction schedule, along with the needed screen interval(s), and other completion details following review of geophysical logging. 9VAC25-610-140 C

    b. Prior to preparation of bid documents for construction of the observation well, the Permittee shall notify the Department and shall include any GWCP requirements in the bid documents. At a minimum, the Department will require a pre-bid meeting with interested drilling contractors and a pre-construction meeting with the successful bidder. 9VAC25-610-140 C

    c. Instrumentation to meet the requirements for real-time data transmission consistent with the State Observation Well Network shall be purchased by the Permittee. The Permittee shall submit a purchase order based on the Department's equipment specifications for review and

approval prior to purchase of the equipment. The Permittee shall install the real-time equipment infrastructure with Department oversight. The Department will conduct final hook-up of the equipment. 9VAC25-610-140 C

d. Instrumentation to meet the requirements for continuous measurement of specific conductance from multiple levels within the well screen shall be purchased by the Permittee. The Permittee shall submit a purchase order based on the Department's equipment specifications for review and approval prior to purchase of the equipment. The Permittee shall install the real-time equipment infrastructure with Department oversight. The Department will conduct the final hook-up of the equipment. 9VAC25-610-140 C

L. Permit Reopening

This permit may be reopened for the purpose of modifying the conditions of the permit as follows:

1. To meet new regulatory standards duly adopted by the Board. 9VAC25-610-140 A 11

2. When new information becomes available about the permitted withdrawal, or the impact of the withdrawal, which had not been available at permit issuance and would have justified the application of different conditions at the time of issuance. 9VAC25-610-310 B 1

3. When the reported withdrawal is less than 60% of the permitted withdrawal amount for a five year period. 9VAC25-610-310 B 2

4. If monitoring information indicates the potential for adverse impacts to groundwater quality or level due to this withdrawal. 9VAC25-610-140 C

COMMONWEALTH of VIRGINIA
DEPARTMENT OF ENVIRONMENTAL QUALITY

PERMIT ISSUANCE FACT SHEET

Groundwater Withdrawal Permit Number: GW0040102
Application Date: June 7, 2021

The Department of Environmental Quality (Department or DEQ) has reviewed the application for a Groundwater Withdrawal Permit. This document provides the pertinent information concerning the legal basis, scientific rationale, and justification for the issuance/reissuance/modification of the Groundwater Withdrawal Permit listed below. Based on the information provided in the application and subsequent revisions, the Department has determined that there is a reasonable assurance that the activity authorized by the permit is a beneficial use as defined by the regulations. Groundwater impacts have been minimized to the maximum extent practicable. The following details the application review process and summarizes relevant information for developing the Permit and applicable conditions.

Permittee / Legal Responsible Party

Name & Address: Virginia Department of Corrections
6900 Atmore Drive
Richmond, VA 23225
Phone: (804) 887-8069

Facility Name and Address

Name & Address: St. Brides Correctional Center
701 Sanderson Road
Chesapeake, VA 23328-6482
Phone: (434) 658-9084

Contact Information:

Name: Mr. Timothy Newton
E-mail: timothy.newton@vadoc.virginia.gov
Phone: (804) 887-8069

Proposed Beneficial Use: Groundwater withdrawal is used for potable domestic water for inmates, officers, and staff at the correctional centers, as well as for the fire suppression system, water treatment and facilities maintenance.

Staff Findings and Recommendations

Based on review of the permit application, staff provides the following findings.

- The proposed activity is consistent with the provisions of the Ground Water Management Act of 1992, and will protect other beneficial uses.
- The proposed permit addresses minimization of the amount of groundwater needed to provide the intended beneficial use.
- The effect of the impact will not cause or contribute to significant impairment of state waters.
- This permit includes a plan to mitigate adverse impacts on existing groundwater users.
- The permit reflects the required consultation with and full consideration of the written recommendations of the Virginia Department of Health (VDH).

Staff recommends Groundwater Withdrawal Permit Number GW0040102 be issued as proposed.

Approved: _____
Scott Morris, DBA, P.E.
Director, Water Division

Date: _____

Processing Dates

Processing Action	Date Occurred/Received
Pre-Application Meeting:	10/7/2020
Application Received by DEQ:	6/7/2021
Permit Fee Deposited by Accounting:	6/7/2021
Application Review Conducted:	2/23/2023
Request for Additional Information Sent:	2/28/2023
Response to Request for Additional Information Received:	3/7/2023
Local Government Ordinance Form Received by DEQ:	6/7/2021
Application Complete:	2/23/2023
Submit Request for Technical Evaluation:	3/9/2023
Technical Evaluation Received by DEQ:	3/17/2023
Draft Permit Package Sent:	4/10/2023
Public Notice Published:	4/28/2023
End of 30-Day Public Comment Period:	5/30/2023
Response to Public comment:	
Public Meeting or Hearing:	

Application

Application Information

Description:

Background / Purpose of Facility:
The Virginia Department of Corrections (DOC) St. Brides and Indian Creek Correctional Centers (SBIC) are located on 246-acres with shared common water infrastructure, including groundwater withdrawal wells, water treatment, storage and distribution and wastewater treatment. A groundwater withdrawal certificate/permit SE-49 was issued September 22, 1986 for Well #1 (DEQ Well #234-00041) and Well #2 (DEQ Well #234-00042) for 283,400 gallons per day (gpd). On June 26, 1989, groundwater withdrawal certificate/permit SE-189 was issued for the same amount to include additional Well #3 (DEQ Well #234-00203). The Indian Creek Correctional Center was built in 1994 and is also serviced by the groundwater wells. Groundwater withdrawal permit GW0040100 was issued January 1, 2000 for Wells #1, #2 and #3 for 193,000,000 gallons per year (gpy) and 21,000,000 gallons per month (gpm). Groundwater withdrawal permit GW0040100 expired on December 31, 2010. A fourth water supply well, Well #4 (DEQ Well #234-00239) and a monitoring well (DEQ Well #234-00238) were drilled in 2000. Well #2 was abandoned in 2006. Between 2002 and 2005, the original St. Brides Correctional Center was demolished and replaced with the new St. Brides Correctional Center. Groundwater withdrawal permit GW0040101 was issued April 1, 2012 for Wells #1, #3 and #4 for 122,000,000 gpy and 13,000,000 gpm. Well #3 (DEQ Well #234-00203) and Well #4 (DEQ Well #234-00239) are the

operating production wells and Well #1 (DEQ Well #234-00041) has been out of service since October 2005. Groundwater withdrawal permit GW0040101 expired on March 31, 2022 and was administratively continued pursuant to 9VAC25-610-96.

Location of Facility/Withdrawal:

Water Supply Planning Unit: Hampton Roads PDC

City: Chesapeake

GWMA/Aquifer: Eastern Virginia GWMA/Yorktown-Eastover Aquifer

Conjunctive Use Source: No conjunctive use

Withdrawal Use, Current Need, and Projected Demand:

Basis of Need:
The combined capacity of inmates for the two correctional centers is 2,200 and approximately 520 staff. The inmate population at SBIC was reduced by approximately 25% at the end of 2020 as DOC reduced populations of inmates through early releases to try to control the spread of COVID-19. The inmate population is expected to increase as a safer environment is established with control of the pandemic.

Groundwater is used at the facility for the following purposes:

- Domestic potable uses for inmates, correctional officers and other staff
- Fire suppression system
- Washing of the augers at the sewage pumping station
- WTP Reverse Osmosis reject water and greensand filters backwashing
- Janitorial/cleaning services
- Small industrial type laundry service
- Occasional vehicle washing
- Some landscape irrigation

Approximately 79% of groundwater withdrawal is used for human consumption. The remaining groundwater becomes backwash from the water treatment filters and Reverse Osmosis concentrate that is discharged into the backwash pond and then the wastewater treatment plant.

Water Demand and Projections:
Water projections were based on the maximum water demands between 2012 and 2021 and adding 10% to these values. There are no plans for major expansion at the facility within the next fifteen-year permit term.

For the annual projected demand, 118,831,800 gallons was estimated (108,938,000 gallons was the maximum annual use in 2020 + 10,893,800 gallons or 10%). This was rounded up to 119,000,000 gallons with an additional buffer to maintain the current permitted annual limit of 122,000,000 gallons.

For the monthly projected demand, 10,985,700 gallons was estimated (9,987,000 gallons was the maximum monthly use in June 2020 + 998,700 gallons or 10%). This was rounded to 11,000,000 gallons with an additional buffer to maintain the current permitted monthly limit of 13,000,000 gallons.

Withdrawal Volumes Requested: The applicant requested the following withdrawal volumes based upon the projected groundwater demand.

Period of Withdrawal	Total Volume (gal.)	Volume in gal/day
Maximum Monthly:	13,000,000	419,355
Maximum Annual:	122,000,000	334,247

Department Evaluation

Historic Withdrawals:
Annual groundwater withdrawals over the past ten years between 2012 and 2021 ranged from 95,945,000 gallons in 2012 to 108,938,000 gallons in 2020 during the COVID-19 pandemic, averaging 101,276,500 gallons. Monthly withdrawals during this same period ranged from 2,825,000 gallons in February 2019 (which was right before a meter change and likely inaccurately low) to 13,132,000 gallons in January 2022 (an exceedance of the monthly limit). Removing these anomalous months and the months following the end of 2020 when the inmate population was decreased due to the pandemic and as a result the water withdrawals decreased, monthly withdrawals have been consistently between 8,000,000 and 10,000,000 gallons.

Analysis of Alternative Water Supplies:
No viable water source other than groundwater from the Yorktown-Eastover aquifer are currently available for the SBCC water system. The City of Chesapeake has a water treatment plant (WTP) along Route 168. The nearest water line is approximately 1.7 miles. Capital costs to connect to this water line and water usage volume are prohibitively high. The process of treating surface water from the Northwest River would not be a reliable source of water due to salinity and color compound found in the river. The use of water from the Cornwallis Cave aquifer would be too shallow and would produce water with possibly higher salinity issues than the use of surface water from the Northwest River.

Public Water Supply:
The VDH Waterworks Operation Permit (WWOP) #3550750 effective April 6, 2015 consists of three wells, all screened within the Yorktown-Eastover aquifer: Well #1 (DEQ Well #234-00041), Well #3 (DEQ Well #234-00203) and Well #4 (DEQ Well #234-00239), a Water Treatment Plant with an integrated Greensand Filter/Reverse Osmosis system, chlorination, a 500,000-gallon elevated storage tank, a 200,000-gallon ground storage tank, two booster pumps and a distribution system.

Water Supply Plan Review:
St. Brides/Indian Creek Correctional Center is included in the Hampton Roads Regional Water Supply Plan (2011). Water Supply Plan demand projections for the facility were included in the Plan and could be considered in the evaluation of the permit request. The Statement of Needs and Alternatives in the Water Supply Plan stated that existing supply in the Southside subregion would meet projected demands through the planning period (2050).

Department Recommended Withdrawal Limits:
The Department accepts the requested limits and recommends the following withdrawal volumes based upon evaluation of the groundwater withdrawal permit application.

Period of Withdrawal	Total Volume (gal.)	Volume in gal/day
Maximum Monthly:	13,000,000	419,355
Maximum Annual:	122,000,000	334,247

Technical Evaluation:
Aquaveo, LLC performed a technical evaluation of the application for the Department based on the VAHydro Groundwater Coastal Plain Model (VAHydro-GW-VCPM). The objectives of this evaluation were to determine the areas of any aquifers that will experience at least one foot of water level decline due to the proposed withdrawal (the Area of Impact or AOI), to determine the potential for the proposed withdrawal to cause salt-water intrusion, and to determine if the proposed withdrawal meets the 80% drawdown criteria. Aquaveo, LLC also evaluated water levels in the Coastal Plain Model compared to measured field values.

The Department concluded that the proposed withdrawal satisfies the technical evaluation criteria for permit issuance. A summary of the results of the evaluation and the AOI for the Yorktown-Eastover aquifer is provided in the Technical Evaluation (Attachment 1).

Part I
Operating Conditions

Authorized Withdrawals:

Owner Well Name	DEQ Well #	Aquifer	Type	Pump Intake Limit (ft. bls)
Well #3	234-00203	Yorktown-Eastover	Production, Water Quality Monitoring	105
Well #4	234-00239	Yorktown-Eastover	Production	105

Apportionment:
Because the two production wells, Well #3 (DEQ Well #234-00203) and Well #4 (DEQ Well #234-00239), are screened within the same aquifer (Yorktown-Eastover), apportionment is not required as a condition of this permit.

Additional Wells:

Observation Wells:

Owner Well Name	DEQ Well #	Aquifer	Type
MW-4	234-00238	Yorktown-Eastover	Water Level Monitoring

Abandoned Wells:

Owner Well Name	DEQ Well #	Aquifer	Date Abandoned
Well #2	234-00042	Water Table	9/25/2006

Out of Service Wells:

Owner Well Name	DEQ Well #	Aquifer
Well #1*	234-00041	Yorktown-Eastover

*Note, Well #1 is being maintained as an emergency back-up well and is currently not connected to the water system. The Department must be notified in writing prior to it being brought back into production and a permit modification completed prior to its use.

Pump Intake Settings:
Department staff geologist has reviewed available information and made the following determinations regarding the location of the aquifer tops for Well #1 (DEQ Well #234-00041), Well #3 (DEQ Well #234-00203), Well #4 (DEQ Well #234-00239) and the Monitoring Well, MW 4 (DEQ Well #234-00238). Information reviewed in this process included the geophysical logs for Well #4 and the Monitoring Well, as well as the driller's logs, and GW-2 forms for each well and The Virginia Coastal Plain Hydrogeologic Framework (USGS Professional Paper 1731).

Unit	Well #1 (ft. bls)	Well #3 (ft. bls)	Well #4 (ft. bls)	MW-4 (ft. bls)
Base of Water Table Aquifer			35	
Top Yorktown-Eastover Aquifer	105	105	105	105
Bottom Yorktown-Eastover Aquifer	300	300	300	300

All production well pumps are correctly positioned in accordance with 9VAC25-610-140 A 6. The well pumps for Well #3 and Well #4 are set at 100 ft. bls (feet below land surface). There currently are no pumps in Well #1 or MW-4. The pump intake depth for Well #1 must be appropriately documented and reported to the Department and a permit modification completed prior to its use to confirm compliance with its pump intake limit.

Withdrawal Reporting: Groundwater withdrawals are to be recorded monthly and reported quarterly.

Water Conservation and Management Plan:
A Water Conservation and Management Plan (WCMP) meeting the requirements of 9VAC25-610-100 B was submitted and reviewed as part of the application process. The accepted Plan is to be followed by the permittee as an operational Plan for the facility/water system, is incorporated by reference into this permit, and shall have the same effect as any condition contained in this permit and may be enforced as such (Attachment 2). In addition, the Permit includes conditions requiring the following:

- Documentation that the leak detection and repair program defined in the WCMP has been initiated is due by the end of the first year of the permit term.
- A result of an audit of the total amount of groundwater used in the distribution system and operational processes is due by the end of the second year of the permit term.
- A report on the plan's effectiveness in reducing water use, including revisions to those elements of the WCMP that can be improved and addition of other elements found to be effective based on operations to date shall be submitted by the end of years five [*date*] and ten [*date*] of the permit term.

Mitigation Plan:
The predicted AOI resulting from the Technical Evaluation extends beyond the property boundaries in the Yorktown-Eastover aquifer. Given this prediction, a Mitigation Plan to address potential claims from existing well owners within the predicted area of impact is incorporated by reference in the permit and shall have the same effect as any condition contained in this permit and may be enforced as such (Attachment 3).

Well Tags: Well tags will be transmitted by the Department after issuance of the final permit.

Part II
Special Conditions

Review of the applicant's application, well construction data, operations at the facility, and the Technical Evaluation of the application did not identify a need for water quality or water level monitoring, pump intake reset, or well abandonment conditions in the permit. There are no new wells currently planned for construction during the permit term. Aquifer testing has been completed at the facility. Construction of observation wells or well nests, and geophysical boreholes to assist in monitoring or characterizing the local or regional aquifer system are not required at this time.

Water Quality Monitoring:
The permittee shall collect a ground water quality sample from Well # 3 (DEQ Well #234-00203) completed in the Yorktown-Eastover Aquifer on a quarterly basis. Prior to collecting the sample, the well shall be pumped sufficiently to withdraw at least three well volumes and the Ph, temperature, and conductivity of the discharge shall be stabilized. The sample shall be analyzed for, at a minimum, chloride, sulfate, alkalinity, fluoride, calcium, magnesium, zinc, sodium, iron, and potassium content, and an anion-cation balance (as described in Part 1030 F.1 of "Standard Methods for the Examination of Water and Wastewater") shall be performed on the results. A report of the results shall be submitted quarterly with the withdrawal reports required in Condition D.1. of Part I Operating Conditions. Records of ground water quality sampling results including documentation of Ph, temperature, and conductivity stabilization prior to sampling shall be maintained Permittee as required in 9VAC25-610-130 F.

Water Level Monitoring:
A continuous water level recording instrument shall be maintained on the monitoring well (DEQ Well #234-00238) completed in the Yorktown Eastover Aquifer. Daily low water level records shall be submitted quarterly with the withdrawal reports required in Condition D.1. of Part I Operating Conditions. Records of groundwater levels shall be maintained by the Permittee as required in 9VAC25-610-130 F.

Part III
General Conditions

General Conditions are applied to all Groundwater Withdrawal Permits, as stated in the Groundwater Withdrawal Regulations, 9VAC25-610.

Public Comment

The following sections will be completed after close of the public comment period.

Relevant Regulatory Agency Comments:

Summary of VDH Comments and Actions:

Public Involvement during Application Process:

Local and Area wide Planning Requirements:
The City Manager certified on February 24, 2021, that the facility's operations are consistent with all ordinances. The Department received this certification on June 7, 2021.

Public Comment/Meetings:
The public notice was published in xxxxxx on XXX. The public comment period ran from xxxxx to xxxxx

Changes in Permit Part II Due to Public Comments

Changes in Permit Part III Due to Public Comments

Attachments

1. **Technical Evaluation**
2. **Water Conservation and Management Plan**
3. **Mitigation Plan**
4. **Public Comment Sheet *(if warranted)***

COMMONWEALTH of VIRGINIA
DEPARTMENT OF ENVIRONMENTAL QUALITY

TECHNICAL EVALUATION FOR PROPOSED GROUNDWATER WITHDRAWAL

Date: March 9, 2023

Application /Permit Number: GW0040102

Owner / Applicant Name: Virginia Department of Corrections

Facility / System Name: St. Brides and Indian Creek Correctional Centers

Facility Type: Non-Municipal Public Water Supply

Facility / System Location: City of Chesapeake

The Commonwealth of Virginia's Groundwater Withdrawal Regulations (9VAC25-610) provide that, for a permit to be issued for a new withdrawal, to expand an existing withdrawal, or reapply for a current withdrawal, a technical evaluation shall be conducted. This report documents the results of the technical evaluation conducted to meet the requirements for the issuance of a permit to withdraw groundwater within a Designated Groundwater Management Area (9VAC25-600).

This evaluation determines the:

(1) The Area of Impact (AOI): The AOI for an aquifer is the areal extent of each aquifer where one foot or more of drawdown is predicted to occur as a result of the proposed withdrawal.

(2) Water Quality: The potential for the proposed withdrawal to cause salt water intrusion into any portion of any aquifers or the movement of waters of lower quality into areas where such movement would result in adverse impacts on existing groundwater users or the groundwater resource.

(3) The Eighty Percent Drawdown (80% Drawdown): The proposed withdrawal in combination with all existing lawful withdrawals will not lower water levels, in any confined aquifer that the withdrawal impacts, below a point that represents 80% of the distance between the land surface and the top of the aquifer at the points where the one-foot drawdown contour is predicted for the proposed withdrawal.

Requested withdrawal amount:

Requested Withdrawal Amount	
Fifteen (15) Year Value	Not Applicable
Annual Value	122,000,000 gallons (334,247 average gpd)
Monthly Value	13,000,000 gallons (419,355 average gpd)

Requested Apportionment of Withdrawal:

DEQ Well #	**Owner Well #**	**Aquifer**	**Percent of Withdrawal**
234-00203	Well #3	Yorktown-Eastover	36
234-00239	Well #4	Yorktown-Eastover	64

Summary of Requested Withdrawal:
The Virginia Department of Corrections (DOC) St. Brides and Indian Creek Correctional Centers (SBIC) are located on 246-acres with shared common water infrastructure, including groundwater withdrawal wells, water treatment, storage and distribution and wastewater treatment. Well #3 (DEQ Well #234-00203) and Well #4 (DEQ Well #234-00239) are the operating production wells and Well #1 (DEQ Well #234-00041) has been out of service since October 2005.

Groundwater is used at the facility for the following purposes:
Domestic potable uses for inmates, correctional officers and other staff; fire suppression system; washing of the augers at the sewage pumping station; WTP Reverse Osmosis reject water and greensand filters backwashing; janitorial/cleaning services; small industrial type laundry service; occasional vehicle washing; and landscape irrigation.

Production Wells:

Identification	Location	Construction	Pump Intake	Source Aquifer
Owner Well Name: Well #3 DEQ Well Number: 234-00203 MPID: 363648076111101	Lat: : 36° 36' 48.7764" Lon: -76° 10' 57.4176" Datum: WGS84 Elevation: 9’	Completion Date: 11/14/1991 Screens (ft/bls): 120-150 Total Depth (ft/bls): 150	100 ft bls	Yorktown-Eastover
Owner Well Name: Well #4 DEQ Well Number: 234-00239 MPID: 363644076105001	Lat: : 36° 36' 42.8832" Lon: -76° 10' 46.9236" Datum: WGS84 Elevation: 9’	Completion Date: 10/26/2000 Screens (ft/bls): 115-125, 125-145 Total Depth (ft/bls): 155	100 ft bls	Yorktown-Eastover

Out of Service/Abandoned Wells:

Identification	Location	Construction	Pump Intake	Source Aquifer
Owner Well Name: Well #1 DEQ Well Number: 234-00041 MPID: 363637076104901	Lat: : 36° 36' 46.3896" Lon: -76° 10' 53.9040" Datum: WGS84 Elevation: 9’	Completion Date: 1/22/1962 Screens (ft/bls): 110-140 Total Depth (ft/bls): 142	63 ft bls	Yorktown-Eastover Out of Service since 10/2005
Owner Well Name: Well #2 DEQ Well Number: 234-00042 MPID:	Lat: : 36° 36' 40.8744" Lon: -76° 10' 54.9840" Datum: WGS84 Elevation: 9’	Completion Date: Screens (ft/bls): Total Depth (ft/bls): 105	N/A	Water Table Abandoned 9/25/2006

Observation Well:

Identification	Location	Construction	Pump Intake	Source Aquifer
Owner Well Name: MW 4 DEQ Well Number: 234-00238 MPID: 363648076111199	Lat: : 36° 36' 31.8744" Lon: -76° 10' 47.6976" Datum: WGS84 Elevation: 9’	Completion Date: 10/13/2000 Screens (ft/bls): 110-120, 135-145 Total Depth (ft/bls): 155	N/A	Yorktown-Eastover

Geologic Setting:

The St. Brides and Indian Creek Correctional Centers wells (applicant wells) are located in Chesapeake County. The applicant’s production wells are screened in the Yorktown-Eastover aquifer. USGS Professional Paper 1731[1], *The Virginia Coastal Plain Hydrogeologic Framework* (VCPHF), is the most recent study discussing the aquifers and confining units of the Virginia Coastal Plain. The study utilized numerous boreholes throughout the Virginia Coastal Plain to interpolate the elevations of the different hydrogeologic units found in the Coastal Plain.

The Yorktown-Eastover aquifer is widespread, relatively shallow, and the second most used source of groundwater in the Virginia Coastal Plain. The aquifer is found above the Calvert confining unit and below the Yorktown-Eastover confining zone across most of its southern extent. The aquifer is primarily composed of estuarine to marine, variably textured, quartz sands and interbedded silts and clays of the Yorktown Formation of Pliocene age. The lower part consists of abundant fossiliferous sands of the Eastover Formation of late Miocene age.

The nearest east-west geologic cross section, JD-JD’, from the USGS Professional Paper 1731 is shown in the figure at the end of this report.

Hydrologic Framework:

Data from the VCPHF is reported in this technical report to illustrate the hydrogeologic characteristics of the aquifers in the Virginia Coastal Plain near the applicant well and identify major discrepancies between regional hydrogeology and site logs interpreted by DEQ staff. The Virginia Coastal Plain Model[2] (VCPM) framework was constructed by extracting the hydrogeologic unit tops and thicknesses from the VCPHF. The original USGS VCPM was updated and adapted for use in the VA-DEQ well permitting process and is referred to as VAHydroGW-VCPM.

VAHydroGW-VCPM Model:

The following table lists the locations of the applicant production wells within the VAHydroGW-VCPM Model.

VAHydroGW-VCPM Model Grid				
Well	**Well Number**	**MPID**	**Row**	**Column**
Well #3	234-00203	363648076111101	124	75
Well #4	234-00239	363644076105001	124	75

[1] McFarland E. R., and Bruce T.S., 2006. The Virginia Coastal Plain Hydrologic Framework: U.S. Geologic Survey Professional Paper 1731. 118 p., 25 pls. (available online at http://pubs.water.usgs.gov/pp1731/).

[2] Heywood, C.E., and Pope, J.P., 2009, Simulation of groundwater flow in the Coastal Plain aquifer system of Virginia: U.S. Geological Survey Scientific Investigations Report 2009–5039, 115 p.

The following aquifer top elevations and thicknesses are simulated in the VAHydroGW-VCPM Model at the model cell containing the applicant wells.

VAHydroGW-VCPM Model Hydrogeologic Unit Information		
Aquifer	**Elevation (ft-msl)**	**Depth (ft-bls)**
Surface	9	0
Water Table aquifer (bottom)	-23	32
Yorktown-Eastover (top)	-36	45
Yorktown-Eastover (bottom)	-130	139
Piney Point (top)	-544	553
Piney Point (bottom)	-570	579
Aquia (top)	-603	612
Aquia (bottom)	-638	647
Peedee Aquifer (top)	-718	727
Peedee Aquifer (bottom)	-797	806
Virginia Beach Aquifer (top)	-809	818
Virginia Beach Aquifer (bottom)	-858	867
Potomac (top)	-1029	1038
Potomac (bottom)	-2470	2479

Note: ft-msl = feet above mean sea level

Groundwater Characterization Program Recommendations:
Department staff has reviewed available information and made the following determinations regarding the location of the aquifer tops for Well #1 (DEQ Well #234-00041), Well #3 (DEQ Well #234-00203), Well #4 (DEQ Well #234-00239) and the Monitoring Well, MW 4, (DEQ Well #234-00238). Information reviewed in this process included the geophysical logs for Well #4 and the Monitoring Well, as well as the driller's logs, and GW-2 forms for each well and The Virginia Coastal Plain Hydrogeologic Framework (USGS Professional Paper 1731).

Unit	Well #1 (ft/bls)	Well #3 (ft/bls)	Well #4 (ft/bls)	MW 4 (ft/bls)
Base of Water Table Aquifer			35	
Top Yorktown-Eastover Aquifer	105	105	105	105
Bottom Yorktown-Eastover Aquifer	300	300	300	300

Comparison of the Hydrogeologic Framework and Geologist Report:
The VCPMF identifies the top and thickness of the Yorktown-Eastover aquifer at an elevation of 45 ft-bls and 94 feet thick at the cell containing the applicant wells. The average top elevation and thickness of the Yorktown-Eastover aquifer given by DEQ staff are 105 ft-bls and 195 feet thick, respectively. The top elevation of the Yorktown-Eastover aquifer identified by the VCPMF is 60 feet higher than the top elevation identified by DEQ staff. The thickness of the Yorktown-Eastover aquifer identified by the VCPMF is 101 feet thinner than the thickness identified by DEQ staff.

Pump Intake Elevation:
Virginia regulations specify that well pump intakes must be placed at or above the top of the source aquifer. Based on a review of available site information by DEQ staff the pump intake elevations for both wells are in compliance with the limits specified by regulation[3].

Water Level Comparison:
The *Virginia Coastal Plain Model (VAHydroGW-VCPM) 2021-2022 Annual Simulation of Potentiometric Groundwater Surface Elevations of Reported and Total Permitted Use* report (the *2021-2022 report)* and modeling files[4] provide two sets of simulated potentiometric water surface elevations. These water elevations are based upon, 1) the reported withdrawal amount of wells in the VAHydroGW-VCPM model ("the reported use simulation") and, 2) the total permitted withdrawal amount for wells in the VAHydroGW-VCPM model ("the total permitted simulation"). USGS regional observation network well water levels were compared to the water levels in the 2021-2022 report in order to evaluate the performance of the regional model in the vicinity of the applicant wells and assess historical groundwater trends. In the tables below, simulated water levels from the year 2021, from the reported use simulation, were compared to USGS measured water levels for the same year. For comparison, the total permitted simulated water levels are also reported. The total permitted water levels are taken from the end of the 50 year total permitted simulation and represent simulated water levels, 50 years from present, if all GWMA wells were to pump at their total permitted amount.

The USGS regional observation network wells closest to the applicant wells are shown in Figure 1 and listed in the following tables. The depth of these wells corresponds with the Yorktown-Eastover aquifer. The distances from the applicant wells to the USGS wells are also given in the tables. The 2021 annual average water levels observed in the regional observation network wells are given in the following tables.

The VAHydroGW-VCPM row and column containing the USGS wells are also given. The water levels obtained from the regional observation network wells are shown in Figures 2 and 3**.**

The water level graph for the first well in the Yorktown-Eastover aquifer (62B 18) shows annual fluctuations of between one and three feet from the time of the earliest available records (1999) to the present. The overall water level at this well has remained relatively stable from 1999 to the present. The VAHydroGW-VCPM simulated reported use water levels at this location are approximately 1 to 6 feet lower than, but in general agreement with the USGS observed water levels.

The water level graph for the second well in the Yorktown-Eastover aquifer (63A 3) shows annual fluctuations of between less than one foot and approximately 0.5 feet, but the overall change from the time of the earliest available records for this well (2008) to the last measurement in September of 2022 is relatively small. The VAHydroGW-VCPM simulated reported use water levels at this location are 0 to 1 feet higher than, but also in general agreement with those observed at the USGS regional well.

[3] 9 VAC 25 610 140.A.5. "The permittee shall not place a pump or water intake device lower than the top of the uppermost confined aquifer that a well utilizes as a ground water source or lower than the bottom of an unconfined aquifer that a well utilizes as a ground water source;

[4] Refer to "Virginia Coastal Plain Model (VAHydroGW-VCPM) 2021-2022 Annual Simulation of Potentiometric Groundwater Surface Elevations of Reported and Total Permitted Use" at http://www.deq.virginia.gov/Programs/Water/WaterSupplyWaterQuantity/GroundwaterCharacterization/ReportsPublications.aspx

Yorktown-Eastover Aquifer		
Measurement	**Well 62B 18**	**Well 63A 3**
Distance from nearest applicant well (miles)	10.1	11.1
Elevation (ft-msl)	13.3	1.9
VAHydroGW-VCPM Row	119	128
VAHydroGW-VCPM Column	84	85
VAHydroGW-VCPM Cell Elevation	8	6
USGS Regional Well 2021 Average Water Level (ft-bls)	6.3	2.4
USGS Regional Well 2021Average Water Level (ft-msl)	6.9	-0.5
VAHydroGW-VCPM 2021 Reported Use Simulated Water Level (ft-bls)	6.3	2.4
VAHydroGW-VCPM 2021 Reported Use Simulated Water Level (ft-msl)	1.7	-0.5
VAHydroGW-VCPM Total Permitted Simulated Water Level (ft-bls)	6.4	4.4
VAHydroGW-VCPM Total Permitted Simulated Water Level (ft-msl)	1.6	1.6

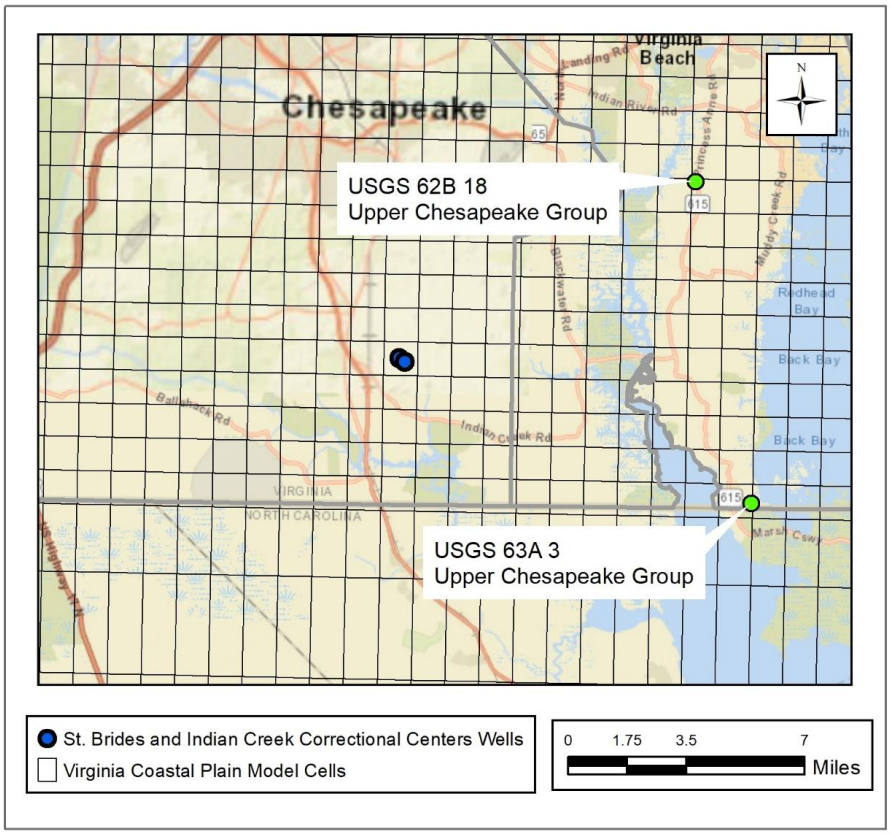


Figure 1. Nearest USGS regional observation network wells.

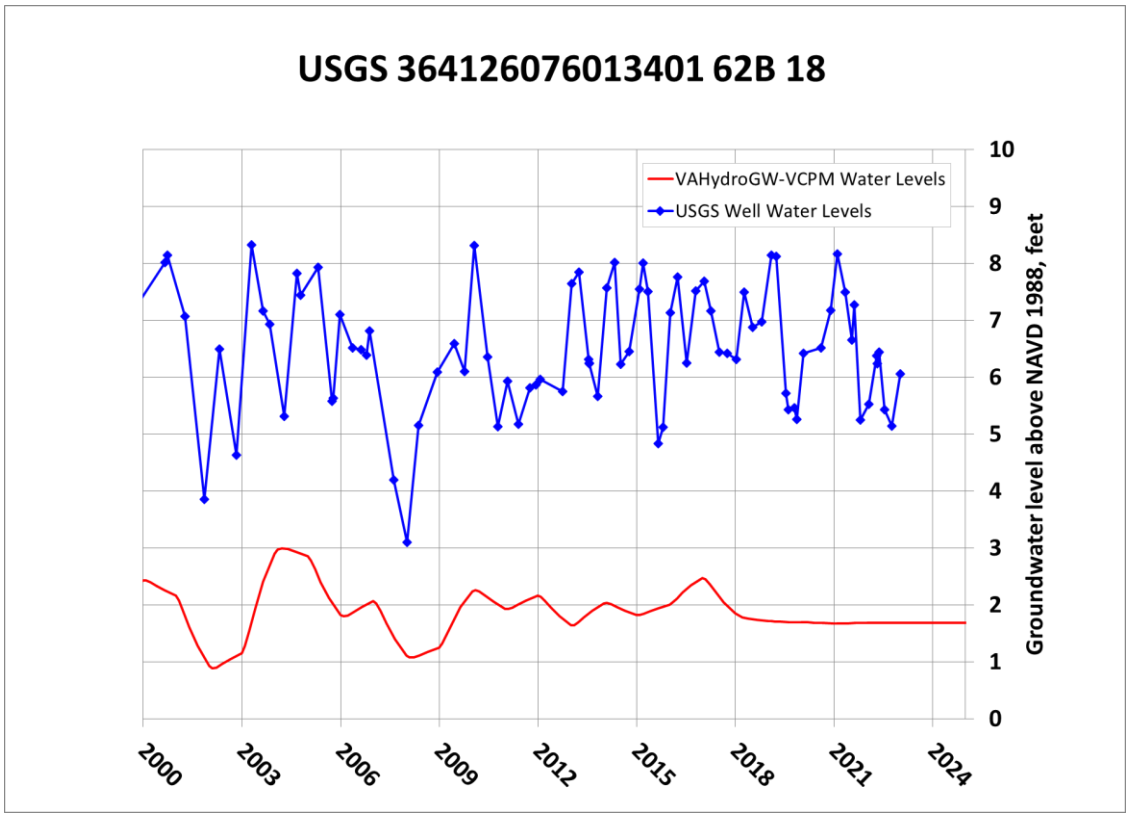


Figure 2. USGS Regional Observation Well 62B 18, Yorktown-Eastover aquifer water levels (Upper Chesapeake Group) recorded from 1999 to present (well depth 135 ft bls, land surface 13.3 ft msl) and VAHydroGW-VCPM reported use water levels.

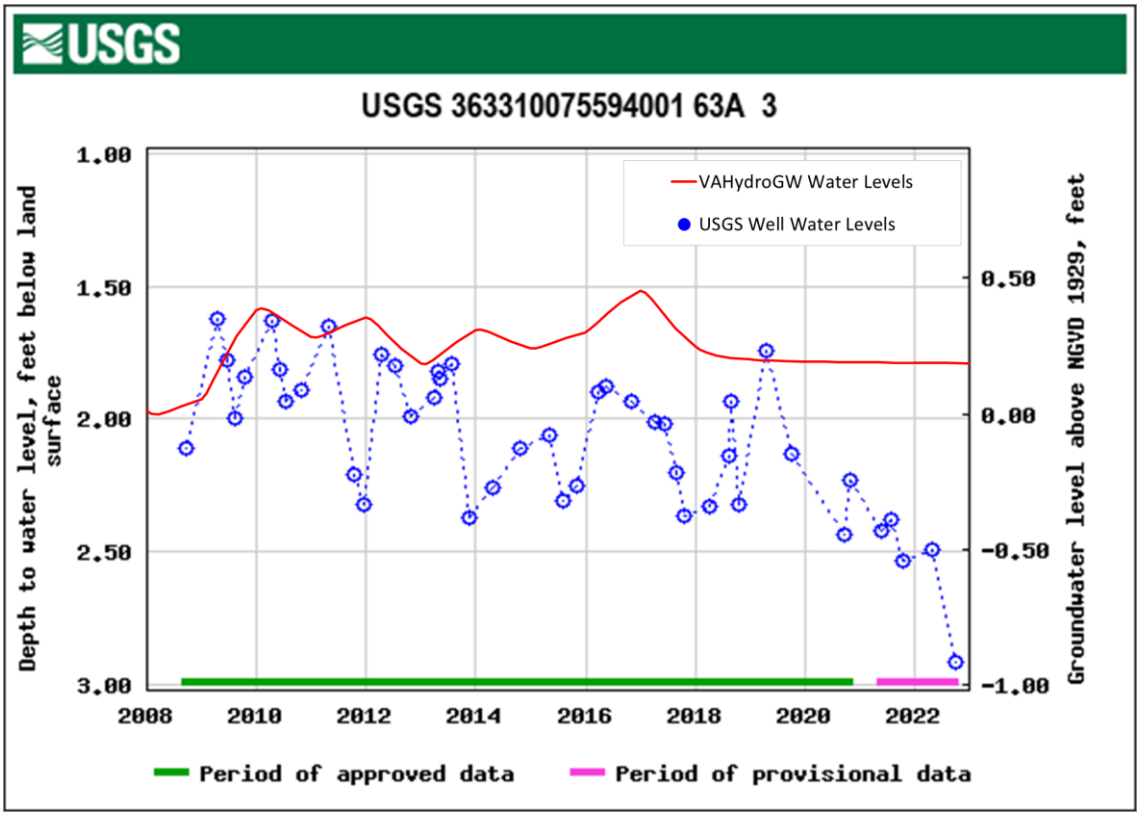


Figure 3. USGS Regional Observation Well 63A 3, Yorktown-Eastover aquifer water levels (Upper Chesapeake Group) recorded from 2008 to September, 2022 (well depth 157.5 ft bls, land surface 1.9 ft msl) and VAHydroGW-VCPM reported use water levels.

Aquifer Test(s):
The applicant's consultant, Sydnor Hydro, Inc., conducted a 24-hour pump test at the St. Brides and Indian Creek Correctional Centers facility on 10/31/2000 in connection with the installation of Well #4 (DEQ Well #234-00239). The test incorporated one pumping well, Well #4, and one observation well, MW 4 (DEQ Well #234-00238). Refer to the attached GW0040101 2011 Technical Evaluation for details.

The hydraulic properties for the VAHydroGW-VCPM cell containing the applicant wells are shown in the following table.

Hydrogeologic Unit	Horizontal Conductivity (ft/day)	Transmissivity (ft^2/day)	Storage Coefficient	Specific Storage (1/ft)
Surficial (Columbia) aquifer	2	64	-	0.000032
Yorktown-Eastover aquifer	22.4	2,102.9	0.00303	0.000032
Piney Point aquifer	18.8	487.5	0.00084	0.000032
Aquia aquifer	109	3,815	0.00113	0.000032
Peedee aquifer	23.3	1,840.7	0.00254	0.000032
Virginia Beach aquifer	9	441	0.00158	0.000032
Potomac aquifer	20.1	28,955.8	0.00268	0.000002

Model Results

Evaluation of Withdrawal Impacts:
The VAHydroGW-VCPM model was used to simulate the effects resulting from the proposed withdrawal. The stabilized effects resulting from the proposed withdrawal considers the total permitted withdrawal rate of 122,000,000 gallons gallons/year (334,247 average gallons per day). The stabilized effects were simulated by replacing the reported use amounts in the 2021 VAHydroGW-VCPM Reported Use Simulation with the current maximum annual withdrawal limit allowed under the terms of their permit for all Ground Water Management Area (GWMA) permit holders. That same simulation was executed twice, once with the St. Brides and Indian Creek Correctional Centers withdrawal removed (the baseline simulation), and once with the proposed St. Brides and Indian Creek Correctional Centers withdrawal added (the proposed withdrawal simulation). The stabilized effects of the proposed withdrawal were considered by simulating both simulations for 50 years and observing the difference in water potentiometric levels.

Area of Impact:
The AOI for an aquifer is the areal extent of each aquifer where one foot or more of drawdown is predicted to occur as a result of the proposed withdrawal. The simulated stabilized effects resulting from the VAHydroGW-VCPM baseline and proposed withdrawal simulations listed above predict an area of impact in the Yorktown-Eastover aquifer. An AOI map is included at the end of this report. There are no existing permittees within the AOI for the Yorktown-Eastover aquifer that are in the Yorktown-Eastover aquifer.

Water Quality:
The regional model (VAHydroGW-VCPM) does not indicate any changes to regional flow patterns that would lead to reduced water quality.

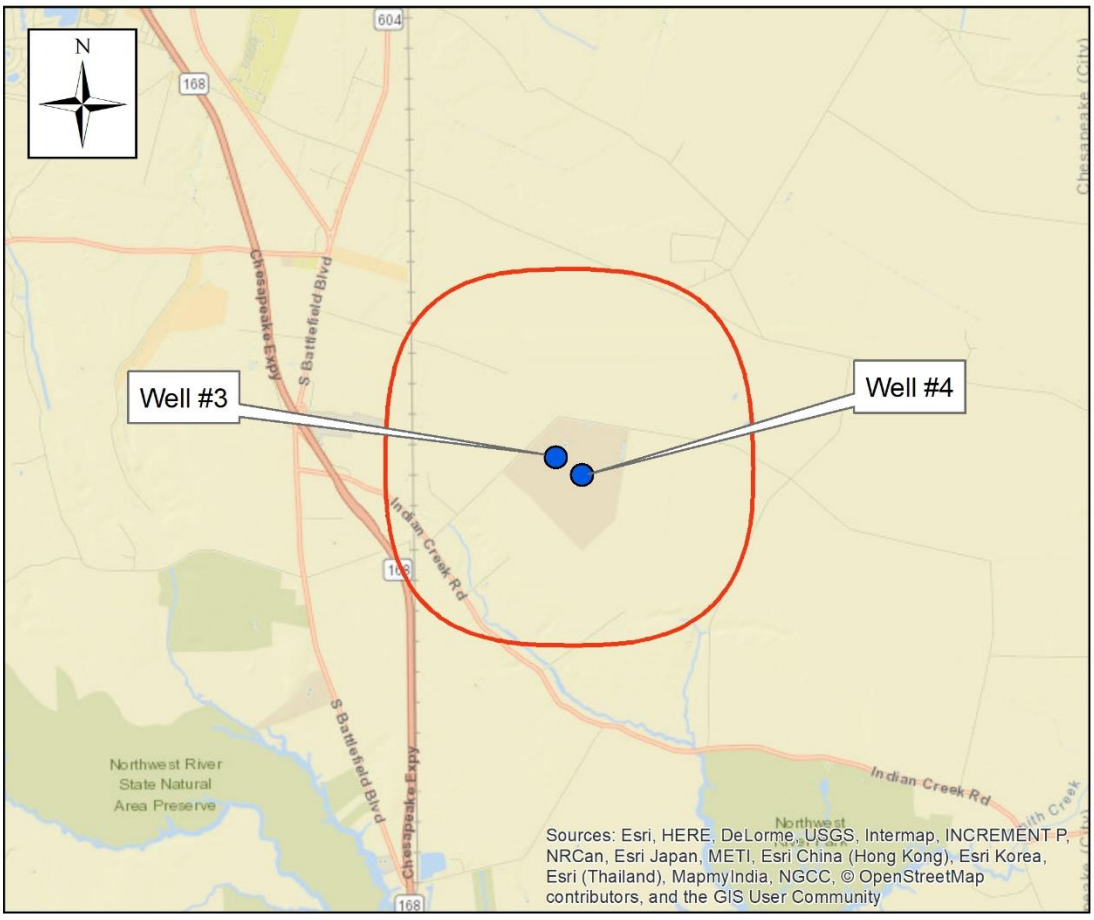
80 % Drawdown:
The 80% criterion was evaluated for the seven confined aquifers in the Virginia Coastal Plain. The proposed withdrawal satisfied the required conditions for permit issuance.

The *Virginia Coastal Plain Model (VAHydroGW-VCPM) 2022-2022 Annual Simulation of Potentiometric Groundwater Surface Elevations of Reported and Total Permitted Use* report documents cells below the 80% drawdown criterion in the Yorktown-Eastover, Piney Point, Aquia, Virginia Beach, and Potomac aquifers for a total permitted withdrawal simulation. The results of the proposed withdrawal simulation listed above predicted no additional cells with lowering of the water levels below the 80% drawdown surface. Additionally, the AOI for the Yorktown-Eastover aquifer does not contain and/or intersect any existing critical cells in the Yorktown-Eastover aquifer. Therefore, this withdrawal is within the limits set by the 80% drawdown criterion.

The requested withdrawal is allocated 100% to the Yorktown-Eastover aquifer. The technical evaluation analysis indicated that the apportionment of the requested withdrawal amount among the applicant production wells had no significant effect on the outcome of the technical evaluation.

Conclusion:
The withdrawal requested by the Virginia Department of Corrections for St. Brides and Indian Creek Correctional Centers satisfies the technical evaluation criteria for permit issuance.

St. Brides and Indian Creek Correctional Centers
Area of Impact - Yorktown-Eastover Aquifer



St. Brides and Indian Creek Correctional Centers Wells

Yorktown-Eastover AOI

Yorktown-Eastover Aquifer Critical Cells

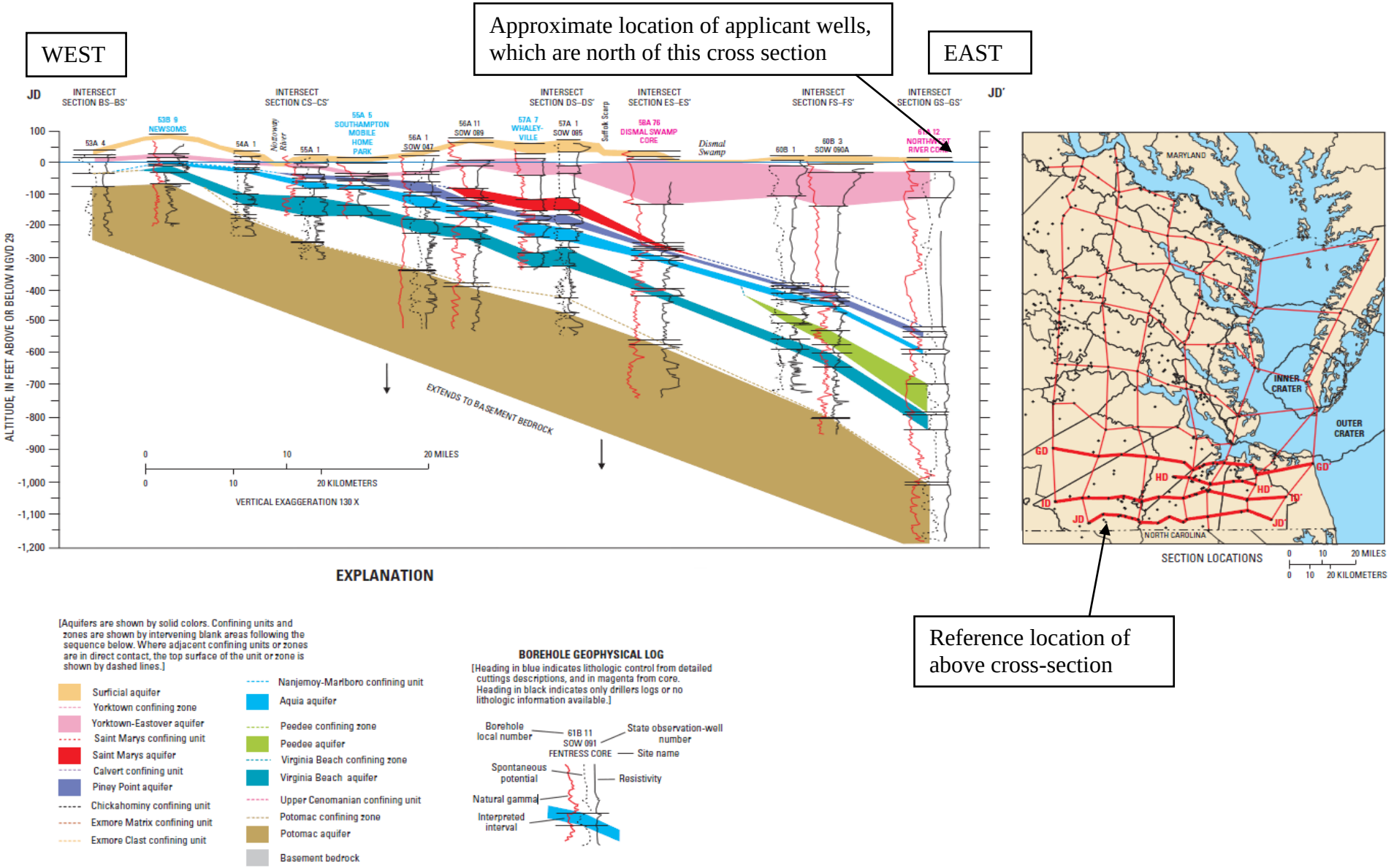
0 0.5 1 2 Miles

Simulated drawdown at or exceeding one foot in the Yorktown-Eastover aquifer resulting from a 50 year simulation of 122,000,000 gallons per year from the Yorktown-Eastover aquifer using the VAHydroGW-VCPM.

Maximum radius of one-foot drawdown (Area of Impact) occurs approximately 1.3 miles from the pumping center.

Technical Evaluation performed by Aquaveo, LLC for the Virginia DEQ, Office of Water Supply Planning
March 17, 2023

DEQ
VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY



Coastal Plain (2006) Cross Section JD-JD' from USGS Professional Paper 1731

WATER CONSERVATION AND MANAGEMENT PLAN

VIRGINIA DEPARTMENT OF CORRECTIONS
ST. BRIDES CORRECTIONAL CENTER
GROUNDWATER WITHDRAWAL PERMIT #GW0040102
CHESAPEAKE, VA

March 15,2023

Prepared by:

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Table of Contents

Attachment

Introduction

The Virginia Department of Corrections (VADOC), Infrastructure and Environmental Management Unit (IEMU) has prepared this Water Conservation and Management Plan (WCMP) pursuant to Virginia's Groundwater Management Act of 1992 (Title 62.1, Chapter 25) and corresponding Groundwater Withdrawal Regulations (9VAC 25-610), which require a Groundwater Withdrawal Permit (GWWP) for any entity located within either the Eastern Virginia or Eastern Shore Groundwater Management Area (GWMA) that withdraws 300,000 gallons of groundwater or more in any one month. This WCMP has been prepared in conjunction with the application for renewal of the existing GWWP (#GW0040102) for the St. Brides Correctional Center and Indian Creek Correctional to meet the Virginia Department of Environmental Quality (DEQ) requirements for a GWWP renewal. The SBCC WCMP also includes Indian Creek Correctional Center (ICCC).

The VADOC implemented a state-wide WCMP for all correctional facilities in 2002. This state-wide WCMP is incorporated into this facility specific WCMP for St. Brides Correctional Center. As part of the state-wide WCMP, water usage at each facility is closely monitored, and wardens are held accountable for water conservation at their respective institutions. Although the VADOC highly supports water conservation and realizes the importance of proper water use, the health, safety, and security of its employees and inmates will not be compromised. Current required health, safety, and security standards hold precedence over this WCMP where an act of water conservation will jeopardize those standards.

The state-wide WCMP requires the appointment of a Water Conservation Manager at each institution including St. Brides Correctional Center. The Water Conservation Manager is appointed from existing staff and is given the responsibility and authority to implement and enforce this WCMP. The individual appointed has prior knowledge of water conservation and is committed to its cause.

1.1 WCMP Requirements

A complete WCMP must satisfy the minimum requirements of 9VAC 25-610-100. SBCC includes both public water consumption (inmates and VADOC employees) as well as Virginia Correctional Enterprise (VCE) and ICCC.

For municipal and nonmunicipal public water supplies such as the SBCC, the WCMP shall include the following:

1. **Where practicable, the plan should require use of water-saving equipment and processes for all water users including technological, procedural, or programmatic improvements to the facilities and process to decrease the amount of water withdrawn or to decrease water demand. The goal of these requirements is to assure the most efficient use of groundwater. Information on the water-saving alternatives examined and the water savings associated with the alternatives shall be provided. Also, where appropriate, the use of water-saving fixtures in new and renovated plumbing as provided in the Uniform Statewide Building Code (13VAC-63) shall be identified in the plan.**
2. **A water loss reduction program, which defines the applicant's leak detection and repair program. The water loss reduction program shall include requirements for an audit of the total amount of groundwater used in the distribution system and operational processes during the first two years of the permit cycle. Implementation of a leak detection and repair program shall be required within one year of the date the permit is issued, the program shall include a schedule for inspection of equipment and piping for leaks;**

3. A water use education program that contains requirements for the education of water users and training of employees controlling water consuming processes to assure that water conservation principles are well known by the users of the resource. The program shall include a schedule for information distribution and the type of materials used;

4. An evaluation of water reuse options and assurances that water shall be reused in all instances where reuse is practicable. Potential for expansion of the existing reuse practices or adoption of additional reuse practices shall also be included; and

5. Requirements for complying with mandatory water use reductions during water shortage emergencies declared by the local governing body or water authority consistent with §§15.2-923 and 15.2-924 of the Code of Virginia. This shall include, where appropriate, ordinances in municipal systems prohibiting the waste of water generally and requirements for providing for mandatory water use restrictions in accordance with drought response and contingency ordinances implemented to comply with 9VAC25-780-120 during water shortage emergencies. The water conservation and management plan shall also contain requirements for mandatory water use restrictions during water shortage emergencies that restricts or prohibits all nonessential uses such as lawn watering, car washing, and similar nonessential residential, industrial, and commercial uses for the duration of the water shortage emergency.

Additionally, facilities with a GWWP are required to maintain a record logging the dates that activities required in the WCMP are completed. These logs are to be made available to DEQ staff upon request.

The above enumerated requirements are addressed in each subsequent of this WCMP.

1.2 Description of Beneficial Use

The SBCC site is located in southern Chesapeake, Virginia on approximately 246 acres owned by VADOC. Facilities at the site include the main SBCC, ICCC, Water Treatment Plant (WTP), Wastewater Treatment Plant (WWTP), maintenance and motor pool and storage buildings, and a warehouse.

The SBCC uses groundwater for the following beneficial uses:

- Showers, restrooms, cooking, dishwashing, ice-making, and drinking water for offenders and corrections officers.
- Restrooms and drinking water in the administrative and maintenance buildings.
- Fire suppression.
- Washing of the augers at the WWTP.
- Heating via boiler systems for the SBCC and ICCC.
- Janitorial / cleaning services throughout the complex.
- Clothes washing; ICCC has a laundry that washes clothes and lining for both SBCC & ICCC with four commercial washing machines. ICCC also has 24 household size washing machines throughout the site and SBCC has 30 household size washing machines throughout the site.
- Occasional vehicle washing; and
- Some landscape watering (shrubs and flowers). Grass watering is prohibited by the VADOC.

- Water Treatment Plant (WTP) - Is a Reverse Osmosis System (RO) with Green Sand Filters requiring daily to weekly backwashing. A Corrosion Inhibitor and pH adjustment is planned on being added to the water system in the future.

- Va. Correctional Enterprise (VCE) has an ink cartridge processing plant at ICCC.

1.3 System Design and Operation

The SBCC water system currently has three groundwater wells (#1, #3, and #4) to supply approximately 300,000 to 400,000 gallons per day (gpd) of water for use at SBCC & ICCC. Well #1 is presently inactive and isolated from the water system. Plans are to reintroduce this well back into the water system in the future for backup security. The water supply wells are located in various areas of the property and are screened in the Potomac aquifer. Storage is provided by a 200,000-gallon ground storage tank and a 500,000-gallon elevated storage tank. Wells 3 and 4 pump water directly to the WTP for treatment by a Reverse Osmosis (RO) three train system with three Green Sand Filters. Chlorination and hardness reduction also is performed. Finish water is pumped to the ground storage tank and two booster pumps transfer water to the elevated tank. There is a combined fire protection system within the water system for both **St. Brides Correctional Center**.

The potable water supply system is managed by the SBCC Infrastructure and Environmental Management Unit (IEMU) water treatment and wastewater treatment staff. The system is automated with level sensors in the facility tanks and telemetric connections to the individual pumping wells. The automatic system has manual overrides that can be used as needed at the main controls located at the WTP.

1.4 Proposed / Planned System Modifications

There are no immediate plans for major expansions of **St. Brides Correctional Center and Indian Creek Correctional** at this time. Prior to the pandemic crises, VADOC was considering adding a Juvenile Justice Unit on the property at SBCC. It was to be small with less than 100 juveniles and minimal staff. No request for additional groundwater withdrawal usage was planned to be made due to the small population to be served.

At this time, the capacity of the existing production wells is adequate to meet the current and projected future water demands at SBCC. Therefore, no new production wells are currently planned or proposed. Additionally, there are currently no plans for major modifications of the existing water storage and distribution system. There is interest in re-establishing Well #1 in the future.

1.5 Water Usage by Type

As part of the GWWP renewal application for SBCC, a breakdown of beneficial uses of groundwater was developed. Of all groundwater used, approximately 79% is for human consumptive use, which includes drinking water, showers, laundry, cooking, heating (steam), and fire suppression. Approximately 21°A of the groundwater used is because of the Reverse Osmosis (RO) WTP. Reject water from the three RO trains and daily backwash water from three Greensand filters make up most of the 21°A. As of the date of this plan, the water system was designed to serves approximately 2,264 inmates and 514 shift employees that work eight hours per day. These figures include both **St. Brides Correctional Center and Indian Creek Correctional**. They will vary at times depending on different circumstances.

1.6 Water Usage Schedule

Historically, groundwater withdrawal from the individual wells has varied from day to day, month to month, and year to year. Each well is typically pumped every day or rotating days. Operation of each well is on an

automated, on-demand (not scheduled) basis with level sensors in the facility storage tanks and telemetric connections to the individual wells. With some exceptions, the highest monthly groundwater usage occurs in the summer months, and the lowest occurs in the fall and winter months.

Generally, water use by the offender population and VADOC employees is consistent year-round.

2 Water-Saving Plumbing and Processes

Where water-saving fixtures or devices are utilized, they must conform to the Uniform Statewide Building Code (USBC) and Virginia Waterworks Regulations. Plan submittals must be made to VADOC's IEMU Architectural and Engineering (A&E) Services Division for review and issuance of building permits, where applicable. The **St. Brides Correctional Center** will purchase devices as described below as replacements to existing fixtures.

VADOC utilizes Johnson Controls to install and replace existing equipment with more water-efficient plumbing and processes throughout the **St. Brides Correctional Center. T**hey have installed where needed, new flush valves that reduced toilet water flush volume from 2+ gallons to 1.6 gallons. Devices were installed on that would not allow toilets to be flushed but twice within 30 minutes to an hour. Water-saver shower heads were installed in all of the showers. Devices were installed that would shut off running water in fixtures not in use.

2.1 Inmate Housing Units and Cells

- Showerheads: Showers have restrictor (water saver) devices installed so that removal cannot be performed without the use of special security tools. All replacement showerheads shall be equipment with similar restrictor devices as the showerhead being replaced.
- Shower mixing valves: All shower mixing valves have the capabilities of being controlled by either time limitations, motion detection, or any other control that limits the time a shower operates and prevents prolonged use.
- Toilets: Because all toilets require sufficient pressure and flow to prevent stoppages, no restrictor device is allowed. Water saver toilet designs are only utilized where security is not jeopardized. Toilet flushometers should be specifically designed to lessen the number of gallons per flush (gpf) while not affecting the proper amount of water necessary for full flush. Flush valves with the requirement of no more than 1.6 gpf should be used.
- Sinks (lavatories): All mixing valves should be equipped with specifically designed devices that limit prolonged use. Devices such as timers, flow controllers, motion detectors, automatic on/off operation, etc. Although aerators are typically a low-cost means of water use reduction, they are not used in areas where inmates can easily remove them.
- Water coolers: Use single-nozzle, push-button, or handicap push-bar only.
- Water-cooled ice makers: Water-cooled ice makers are extremely high in the use of water and are not installed. Existing water-cooled ice makers shall be replaced with air or refrigerant-cooled machines.

2.2 Food Preparation and Mess Hall

- Hose bibs: Utilize water restrictor devices that are manufactured into the hose bib. Use of water restrictors that are easily removed are not used.
- Toilets:

  Inmate access: Because all toilets require sufficient pressure and flow to prevent stoppages, no restrictor device is allowed. Water saver toilet designs are only utilized where security is not jeopardized. Toilet flushometers are specifically designed to lessen the amount of gpf while not affecting the proper amount of water necessary for full flush. Flush valves with the requirement of no more than 1.6 gpf should be used.

  Employee access: Those areas with limited or no access to inmates, the self-contained tank type toilets should be used. Water-saver devices are built-in the flushometer and limit the water use to 1.6 gpf or less.
- Sinks (lavatories): All mixing valves should be equipped with specifically designed devices that limit prolonged use. Devices such as timers, flow controllers, motion detectors, automatic on/off operation, etc. Although aerators are typically a low-cost means of water use reduction, they are not used in areas where inmates can easily remove them.
- Water coolers: Use single-nozzle, push-button, or handicap push-bar only.
- Water-cooled ice makers: Water-cooled ice makers are extremely high in the use of water and shall not be installed. Existing water-cooled ice makers are to be replaced with air- or refrigerant-cooled machines.
- Miscellaneous equipment: Food preparation equipment sometimes uses water to heat or cool food during the preparation process. The Food Service Supervisor has all equipment evaluated to see if there is water-dependent equipment in his,i'her kitchen and determine the water use rate. If it is found that the water rate is more than the standard, then the equipment should be replaced with non-water use equipment.

2.3 Industries, Medical, and Educational Areas

- Toilets:

  i-, Inmate access: Because all toilets require sufficient pressure and flow to prevent stoppages, no restrictor device will be allowed. Water saver toilet designs can only be utilized where security is not jeopardized. Toilet flushometers should be specifically designed to lessen the amount of gpf while not affecting the proper amount of water necessary for full flush. Flush valves with the requirement of no more than 1.6 gpf should be used.

  Employee access: Those areas with limited or no access to inmates, the self-contained tank type toilets are used. Water saver devices are built-in the flushometer and limit the water use to 1.6 gpf or less.
- Sinks (lavatories): All mixing valves should be equipped with specifically designed devices that limit prolonged use. Devices such as timers, flow controllers, motion detectors, automatic on/off operation, etc. Although aerators are typically a low-cost means of water use reduction, they are not used in areas where inmates can easily remove them.

  Water coolers: Use single-nozzle, push-button, or handicap push-bar only.

Showers: Where safety or chemical showers are required, no water restriction devices are utilized. These specialized showers are for safety and should not be tampered with. Replacement safety or chemical showers are specifically designed to include water-saver devices in keeping with the safety aspect of the equipment. Where domestic showers are installed, use-timed, flow-controlled, motion detection, etc. devices that limit prolonged use. The use of restrictor type showerheads are required.

Medical or dental equipment: All medical and dental equipment shall be equipped with water saving devices.

X-Ray equipment: Utilize recyclable or reclaimable equipment where practical. Replacement equipment should be specifically designed for recyclable or reclaimable water use and/or utilizes other means of processing.

2.4 Laundries

- Industrial or Commercial: All equipment should be specifically designed with low water use requirements. Full loads should be practiced so as to get the most use of singular loads rather than numerous light loads. 1CCC has a commercial laundry with four commercial washing machines. They wash cloths and linings for both SBCC and ICCC.
- Household or Personal Laundries: Washing machines are installed in the housing units for full-time use by the inmates. They are controlled *by* security staff. These are monitored to prevent the practice of partial or light loading. Washing machines equipped with low-level or water-saver devices shall be utilized. SBCC has 30 household washing machines throughout the site and ICCC has 24 household washing machines throughout the site.

2.5 Administrative and Outside the Secure Perimeter Buildings

- Toilets: Use self-contained or tank type water saver toilets with water saver devices. Where toilets with flush valves are existing, turn the flow control valve at minimal control so as to reduce the amount of gpf but not to the point that prevents clean flushes. Replacement flushometers should be specifically designed with the latest designs in water saver technology.
- Showers: Use restrictor type showerheads and limit the time of showering. Mixing valves should be so equipped with devices to prevent prolonged use and water loss.
- Lavatories (sinks): The use of aerators is encouraged. Use water saver devices and/or designs.
- Water coolers: Use single nozzle, push-button, or handicap push-bar type, only.
- Hose bibs: Use water restrictor aerators and water saver fixtures.
- Washing machines: Use washing machines equipped with water-level control and water-saver devices. Do not wash partial loads. Limit washing to once per week.
- Heating: Properly maintain al components of the boiler system. Water reuse or reclamation systems are encouraged.
- Motor Vehicle Maintenance Areas: Eliminate the practice of using water to clean motors or parts. Purchase and use high-pressure washers. These types of equipment limit the amount of water used for cleaning. Where water is used for cleaning, assure that a functional spray nozzle is used at all times.

2.6 Office Buildings

- Toilets: Use self-contained or tank type water saver toilets with water saver devices. Where toilets with flush valves are existing, turn the flow control valve at minimal control so as to reduce the amount of gpf but not to the point that prevents clean flushes. Replacement flushometers should be specifically designed with the latest designs in water saver technology.
- Showers: Use restrictor type showerheads and limit the time of showering. Mixing valves should be equipped with devices to prevent prolonged use and water loss.
- Lavatories (sinks): The use of aerators is encouraged. Use water saver devices andlor designs.
- Water coolers: Use single nozzle, push-button, or handicap push-bar type, only.
- Hose bibs: Use water restrictor aerators and water saver fixtures.
- Cafeterias: Water saver devices should be used on all plumbing appliances. Maintain faucets, hose bibs and toilet flush valves in good working order. Thawing of frozen foods with water should not be performed.
- irrigation: Automatic on/"off with timed devices should only be used. Set timers such that irrigation is performed at early morning or late afternoon or during non-peak demand periods.

2.7 Agri-Business

There is some farming occurring on VADOC property. This consist of leasing property to a private farmer. He does not utilize any water from the SBCC water system.

ICCC has experimented with greenhouses in the past. They presently have abandoned this vegetable production. It could be reintroduced in the future.

2.8 Fire Suppression

Flush the minimum amount of water through the system once per month to maintain required fire flows and pressures in the event of a fire emergency.

3 Water Loss Reduction Program

Water loss reduction pertains to those areas of the water system where the loss of water is reduced by immediately attending to system leaks, maintaining observation of water use programs, maintaining a preventative maintenance program, minimal use of water for cleaning, and the reduction and monitoring of agricultural use.

The VADOC has defined five distinct categories of water use, which is based on a normal use rate of 120 gallons per day (gpd) per person.

- Conservative water user — below 120 gpd/person;
- Normal water user — use 120 gpd/person;
- Liberal water user — use 121 to 130 gpd/person

- Heavy water user — use 131 to 140 gpd/person; and
- Excessive water user — use greater than 140 gpd/person.

The above water user categories are guidelines for normal use times. However, during drought conditions (Section 6), the water use should be lowered to 110 gpd/person.

3.1 Water Use Monitoring

Monitoring water use is a must for a successful water loss program. The only viable means of effectively monitoring water use is through the installation of water meters. Strategically placed water meters can differentiate those areas of high use from those areas of moderate or low use. Water metering and an effective reading system enables the Water Conservation Manager to pinpoint areas of high water loss.

At SBCC, water meters are strategically installed at each supply well, along the distribution system mains, and along the influent to the wastewater treatment plant and effluent.

3.2 Water Use Reporting

The SBCC/IEMU water/wastewater staff reports water use on a monthly basis to VADOC's IEMU Headquarters and on a quarterly basis to DEQ. The IEMU compiles this information and reduces it to a monthly water use report formatted with bar graphs to show each VADOC institution the reported water use (on a per person basis) for that particular month. These monthly reports are vital to a good water loss reduction program for it shows the amount of use, which can be paramount in searching for ways to reduce the amount of water being used.

The designated Water Conservation Manager for SBCC and 1CCC records water use by reading the water meters on a monthly basis. He/she submits these readings to the IEMU for inclusion in the monthly water use report.

Reading of the water meters allows the Water Conservation Manager to observe water use and investigate high or excessive water use areas.

3.3 Water Distribution and System Leaks

- The IEMU/SBCC operator staff checks meters on a daily basis and investigates sudden increases in water use immediately.
- The maintenance department makes repairs to leaks immediately.
- A comprehensive preventative and corrective maintenance program is followed and maintained.
- Leaking faucets, showerheads, shower mixing valves, worn water hoses, water nipples, hose bibs, watering troughs, sprayers, etc. are repaired immediately.
- Toilet flush valves that do not shut off immediately after each flush are repaired immediately.
- Frost-proof hydrants are installed to prevent freezing that can result in damaged pipes.
- Steam and condensation lines are included in the preventative maintenance program to reduce the amount of water used for make-up.

3.4 Observation of Inmate Bath Areas

Staff observe inmate bath areas to prevent excessive shower time, lavatories that are left on, and toilets that are constantly wasting water. Staff cut off any showers and faucets left on and report any system failures to the maintenance department for repair.

3.5 Preventative and Corrective Maintenance

- Regulate the water flow valve to all toilets to prevent excessive water flow but not regulated to the point where the toilets do not have sufficient pressure to maintain effective flushing therefore causing several flushes to clean bowl.
- Perform regular maintenance on all toilets to prevent excessive flushing times and leaking flush valves and toilets.
- Perform regular maintenance on a4 showers and lavatory mixing valves to prevent constant running and/or dripping.
- Maintain an up-to-date inventory of toilet, shower, and lavatory parts so that defective or worn fixtures can be replaced in a timely fashion.
- Maintain an up-to-date inventory of emergency repair equipment, pipe fittings and pipe (comparable to the installed piping) to allow quick and immediate repairs.
- Constantly observe wet areas on floors, basements, grounds, etc. If excessive or constant, investigate and repair if necessary.
- Purchase and regularly use leak detection equipment.

3.6 Food Preparation Areas

The VADOC Central Office provides guidance as to the correct menus, mixtures of ingredients, etc. to maintain the preparation of proper and healthy meals. These directions are followed to keep water mixtures to a minimum.

The Food Services Director and his/her staff require the reduction of water used for washing utensils and food-serving equipment. In lieu of a full sink of water, use half a sink and wash smaller volumes of equipment at a time, Schedule wash times.

The Food Service Director and his/her staff constantly observe for wasteful water use. Also, the Food Service Director and his/her staff immediately notify the Buildings and Grounds staff of any and all necessary repairs.

The use of water to thaw frozen foods is not permitted.

3.7 General Cleaning

- The use of water for washing down docks, sidewalks, concrete platforms, etc. is held to an absolute minimum.
- Where cleaning of these areas is required to maintain proper sanitation, use well maintained water hoses, assure that washers are installed on hose ends and use automatic on/off water nozzles. Hoses without nozzles and left running for the duration of the cleaning process is not permitted.
- Remove all hoses from hose bibs after use and keep stored in a place where they are not susceptible to damage.
- Where possible, use high pressure washers that use limited amounts of water

3.8 Agricultural

Presently, there is no Agricultural activity be performed at SBCC or ICCC. Some VADOC property has been leased out to a private farmer for raising crops. No groundwater is used for irrigation. Greenhouses

requires use of potable water from groundwater wells. They were experimented with for vegetable growth in the past but were discontinued. No plans are in place to reintroduce this activity.

3.9 Irrigation

Irrigation of lawns at SBCC and ICCC is prohibited. Irrigation of grounds (landscaping shrubs and flowers) is kept to a minimum. Irrigation of grounds only occurs during low-demand times such as early morning or late afternoon. These irrigation times also lessen the amount of water loss due to evaporation.

3.10 Office Buildings

Employees are mindful of water conservation and take efforts to shut off any lavatories left running, report all constant flushing toilets to maintenance, and upon seeing wet areas on floors, grounds, and parking area, report to maintenance.

3.11 Water Loss Reduction Audit

VADOC will conduct an audit of the total amount of groundwater used at the **St. Brides Correctional Center** water system will be conducted monthly throughout the life of the permit cycle. These audits will occur when meter readings are recorded, quarterly when the quarterly ground water withdrawal reports are submitted. The annual review will include needed repairs or upgrades and a prioritization for system improvements.

The audit will consist of the following activities:

- Review of annual and monthly groundwater usage data and comparison of this data to water demand estimates and requested withdrawal amounts provided in the GWWP application;
- Comparison of water meter usage data at the sources (wells) to water meter usage data within the distribution system. The American Water Works Association (AWWA) M36 practice or equivalent method shall be used.
- Review of leak detection and repair records; and
- Submittal of an Audit Report to DEQ.

4 Water Use Education Program

Education of groundwater users at SBCC involves the designated Water Conservation Manager, VADOC's IEMU, the Wardens, maintenance **St. Brides Correctional Center st**aff, and institution employees. Copies of this WCMP will be maintained in the Water Conservation Manager's office and in the maintenance office.

4.1 Duties and Responsibilities

The staff member who is assigned the duty of managing and overseeing water conservation — the Water Conservation Manager — will develop and maintain an education program to assure continual water conservation based on, but not limited to, the following criteria:

- Enforce this WCMP. Report any non-conformance and misuse of water resources to the Administration, Warden, or Superintendent.
- Keep informed of water conservation means and methods by attending national, state, local and private seminars, meetings and events. This includes membership to magazines, papers, newsletters, etc. that pertain to water saving equipment and conservation.

- Routinely (at the discretion of the Water Conservation Manager) hold meetings with Institutional staff or office staff (office buildings) to keep them informed of the latest in water conservation technology and inform them of any amendments to this WCMP.
- Maintain a posting system of newsletters, reports, and drought reports, etc. where all staff have access. Maintain sufficient copies of reports for staff to study and read at their leisure.

  Conduct meetings and in-house seminars with all Institutional staff to keep them informed of water conservation efforts, latest equipment technology, and discuss issues of existing water conservation efforts in and around SBCC and ICCC.

  Quarterly, audit the water system and report findings concerning compliance with this WCMP to the Administration, Warden, or Superintendent. The report should not only report on non-conformance but provide recommendations to prevent future non-conformance.

4.2 Infrastructure and Environmental Management Unit (IEMU)

The IEMU is tasked with administering the WCMP. This includes the initial drafting of this WCMP, implementation, and amendments. The Water Conservation Manager will copy the IEMU on all reports and keep the IEMU informed of accomplishments, non-conformances, and other issues.

The IEMU Service Area Manager for SBCC and ICCC will routinely meet with the Water Conservation Manager during institution visits to discuss progress. The Service Area Manager will assist the Water Conservation Manager with implementation of this WCMP including the water use education program, assistance, and advice for equipment and any support for mandated actions.

4.3 Annual WCMP Training

Each existing VADOC employee assigned to the SBCC and ICCC WCMP team goes through annual training. The Water Conservation Manager will add an approximately 15-minute long section to the annual training on water conservation and this WCMP. Copies of this WCMP will be made available upon request to employees.

4.4 New Employee Training

Any new employees assigned to the SBCC and ICCC WCMP team who have not yet participated in the annual training described above will be required to undergo the WCMP training module. Copies of this WCMP will be made available to any new employees at their request.

5 Water Reuse

Water reuse methods will be investigated and applied in those areas where the health and safety of the employees and inmates is not jeopardized and where feasible. The domestic use of water is limited in its capabilities of reuse. However, non-domestic use (e.g., wastewater plant, cooling water, etc.) wilt take every step feasible to reuse water.

The following forms of water reuse if available at SBCC and ICCC.

- Cooling water in the heat exchangers if and where available.

6 Requirements for Mandatory Water Use Restrictions

The Hampton Roads Regional Water Supply Plan provides procedures and guidelines for managing water use during water shortages. These use restrictions are short-term compared to the normal full-time water conservation programs outlined in this WCMP and are only implemented during periods of drought when adequate water supply may be threatened.

VADOC will comply with any mandatory water use restrictions during water shortage emergencies declared by **the City of Chesapeake, the Virginia Department of Corrections,** or the Commonwealth of Virginia that prohibit all non-essential water uses for the duration of the water shortage emergency.

6.1 Drought Severity Codes

Drought conditions in the Commonwealth are monitored by the Drought Monitoring Task Force, which is led by the DEQ in conjunction with the State Climatologist. Recommendations for curtailment of water use are a result of drought conditions as reported by this Task Force. The Task Force does not demand the curtailment of water use but advises the waterworks owner on conditions which may warrant concern. The representative for the owner in the VADOC is the Director. The Director has directed the IEMN staff to advise him on drought conditions based on information they receive from the Drought Monitoring Task Force and will be recommending what level of drought severity code to employ.

The Task Force has developed a Drought Monitor. The Drought Monitor ranges from a level of dry conditions to exceptional drought conditions. For the purposes of this WCMP, the severity codes will be arranged based on the Drought Monitor.

Drought conditions vary in severity. Therefore, it is best to classify the actions to be taken with respect to the curtailment of water use and conform those severity levels to the Drought Task Force Drought Monitor. Depending on the drought severity level, the action taken could range from no action to drastic water curtailment steps. The following severity codes are to be followed when directed by the IEMU, who after advising the Director, has received his instructions:

6.1.1 Code Blue

Code Blue drought conditions persist when the Drought Monitor stipulates a "Drought Watch" (formerly "DO") or abnormally dry situation. This is a situation where the Drought Task Force would recommend voluntary curtailment of water use but be more concerned with outdoor fires. The following steps shall be taken when a "Code Blue" severity level is announced:

1. Conserve water use as per the previous sections of this WCMP.
2. Voluntarily curtail the use of water.
3. The level of voluntary curtailment should be limited to reduced vehicle washing, irrigation, and the washing down of docks, sidewalks, floors, etc.
4. The IEMU will monitor the Drought Task Force report for changes in the severity level **of** the Drought Monitor.

6.1.2 Code Yellow

Code Yellow drought conditions persist when the Drought Monitor stipulates a "Drought Warning" (formerly "D1 and D2"), which means a moderate to severe drought is imminent. The Drought Monitoring Task Force would elevate the level of voluntary curtailment to stricter limits on the use of water.

During Code Yellow and Code Red drought conditions, the water use per person per day shall be reduced to a maximum use rate of 110 gallons. The following steps shall be taken when a "Code Yellow" severity level is announced:

1. Water conservation as stipulated in the previous sections of this WCMP shall be maintained.
2. Curtail washing of vehicles to one per week. Automatic cutoff devices (spray nozzles, etc.) should be installed on hoses and kept functional. Assure that water hoses are free from leaks and that washers are installed at each end of connection.
3. Curtail the irrigation of flowers and shrubbery to once per week and irrigate only during low flow periods (early morning or late afternoon). Irrigate by hand watering using spray nozzles installed on water hoses. Eliminate the use of sprinklers for the irrigation of flowers, shrubbery, and lawns.
4. Curtail the use of water for wash-down. When wash-downs of loading docks, floors, walls, etc. are critical to good sanitation practices, it should be done so with the use of automatic cut-off devices and limited times per day.
5. Institutional washing machines should be limited to once per week and used for full loads only.
6. Pay special attention to system leaks and make repairs as soon as possible.
7. Office personnel should be cognizant of faucets left on and cut them off, toilets constantly flushing and report to maintenance, and wet areas on lawns, floors, etc. and report to maintenance.

6.1.3 Code Red

Code Red drought conditions persist when the Drought Monitor stipulates a "Drought Emergency" (formerly "D3" or "D4"), which means a significant drought event is occurring. It is the most serious level of drought conditions that persists. The Drought Monitoring Task Force would elevate the level of recommended mandatory curtailment on the use of water.

During Code Yellow and Code Red drought conditions, the water use per person per day shall be reduced to a maximum use rate of 110 gallons. The following steps shall be taken when a "Code Red" severity level is announced:

1. Notify your respective Regional Office, Central Office, and IEMU.
2. Notify your local emergency services and inform them that you are either in short supply or are out of water for fire suppression purposes and have them standby.
3. Cease all washing of vehicles.
4. Cease all irrigation of flowers, shrubbery, etc.
5. Washing of loading docks, floors, sidewalks, walls, etc. should be stopped unless in violation of sanitation concerns. The Food Service Director shall consult with their respective Sanitarian for guidance.
6. Cease all use of Institutional washing machines. For the duration of the Code Red Drought Condition, send clothes to Virginia Correctional Enterprise (VCE) laundries.

7. Restrict inmate showering. Put inmates on scheduled showering times so that each inmate does not shower but every third (3rd) day. Showering should be held to 10 minutes maximum. Food service should prepare cold plate meals only. This will reduce the amount of water used for food preparation and the use of water for washing utensils.

The Water Conservation Manager, with assistance of Institutional personnel, will contact vendors for price and availability of bottle water, bulk water tank trucks for hauling, and portable toilets. A list of potential bottle water vendors, bulk tank haulers, and portable toilet vendors is included in Attachment A.

7 Water Use Emergencies

This section covers those emergency water outages, whether they are brought about by mechanical failure, Code Red drought conditions, or fire. An emergency is declared when the day-to-day activity of the Institution is seriously affected as a result of loss of water.

7.1 EMERGENCY WATER OUTAGE PLAN

1. Immediately notify the Warden or Superintendent, Regional Director, Deputy Director, Office Building Manager, IEMU Water & Wastewater Superintendent, Maintenance, Water Conservation Manager, and IEMU Environmental Manager.
2. Notify your local emergency services and inform them that you are either in short supply or are out of water for fire suppression purposes and have them standby.
3. Cut-off master valves to specific buildings to prevent low water pressure causing flush valves to malfunction.
4. Shut off the master valve leaving the storage tanks full until a full evaluation of the emergency can be performed. This is to prevent losing precious stored water. In the event the water source is shut off, the facility needs to maintain a constant outlook for fire and cut the water back on in the event of fire.
5. Contact vendors for bottled water, bulk tank haulers and portable toilets, and schedule deliveries. A list of potential bottled water vendors, bulk tank haulers, and portable toilet vendors is included in Attachment A.
6. Cease all unnecessary water use activities not crucial to the operation of the institution (e.g., washing vehicles, general cleaning, washing machines, irrigation if utilized, etc.).
7. Food service shall prepare cold plate meals only.

8 WCMP Effectiveness Reporting

VADOC shall develop a report on the plan's effectiveness in reducing water use, including revisions to those elements of the WCMP that can be improved and addition of other elements found to be effective based on operations to date shall be submitted by the end of years five and ten of the permit term (9VAC25-610-140 C) report on the effectiveness of this WCMP in reducing water use at SBCC I ICCC. This will include revisions to those elements of the WCMP that can be improved, and addition of other elements found to be effective based on operations to date. These reports shall include:

- Any new water-saving equipment installed, or water-saving processes adopted.

WCMP actions taken to reduce the volume of water needed to supply the system.

Planned short or long-term efforts and actions to be added to the WCMP to improve the efficiency of water use in the system and for reducing the loss of water.

Results of additional water audits completed.

- Evaluation of the leak detection and repair program.
- Description of educational activities completed.
- Identification of any water reuse opportunities identified.

Groundwater Withdrawal Permit Application Supporting Documentation St. Brides Correctional Center Chesapeake, Virginia

Attachment

A

List of Statewide Bottled Water Supplies, Water Hauling Vendors and Portable Toilet Vendors

Appendix A

LIST OF STATEWIDE BOTTLED WATER SUPPLIERS, WATER HAULING VENDORS AND PORTABLE TOILET VENDORS

A. Bottled Water Suppliers

1. Absolute Bottled Water Company
   Virginia Beach, Virginia
   (757) 468-4426
2. Absolute Purest Water
   Thaxton, Virginia
   (540) 586-5116
3. All American Beverage Service
   Richmond, Virginia
   (804) 276-3212
4. Almost Heaven Spring Water
   Manassas, Virginia
   (703) 668-0094
5. Amelia Springs Water, Inc.
   Amelia Court House,
   Virginia (804) 561-5556
6. Aqua Cool
   Lorton, Virginia
   (703) 550-5900
7. Aqua Cool
   Newport News, Virginia
   (757) 873-3311
8. Aqua Cool
   Richmond, Virginia
   (804) 271-6226
9. Avalon Beverage Company
   Glen Allen, Virginia
   (804) 965-0231
10. B & A Vending, Inc.
    Virginia Beach, Virginia
    (757) 481-1810
11. C & P Water Company
    Smithfield, Virginia
    (757) 357-2127
12. Camp Holly Springs
    Richmond, Virginia
    (804) 795-2096
13. Canady Dry Richmond Corporation
    Richmond, Virginia
    (804) 231-7777
14. Carolla's Virginia Water Conditioning
    Manassas, Virginia
    (703) 368-2777
15. Carter Spring Company
    Martinsville, Virginia
    (540) 632-7800
16. Cedar lane Spring Water
    Richmond, Virginia
    (804) 795-5046
17. Classic Water
    Chesapeake, Virginia
    (757) 546-0985
18. Clear Water Company
    Bluefield, Virginia
    (540) 322-3111
19. Crisp Water, Inc.
    Rural Retreat, Virginia
    (540) 686-4420
20. Culligan Water Conditioning
    Roanoke, Virginia
    (540) 366-9078
21. Culligan Water Conditioning
    Virginia Beach, Virginia
    (757) 340-8720
22. Culligan Water Conditioning
    Ruckersville, Virginia
    (804) 985-4070
23. Culligan Water Conditioning
    Harrisonburg, Virginia
    (540) 564-0141
24. Culligan Water Conditioning
    Richmond, Virginia
    (804) 236-9030
25. Culligan Water Conditioning
    Norton, Virginia
    (540) 679-3574
26. Dalevaie Spring Water Company
    Big Stone Gap, Virginia
    (540) 523-4062
27. Danville Bottled Water Service
    Danville, Virginia
    (804) 685-4061
28. DE Haven Seven-Up Corporation
    Winchester, Virginia
    (540) 665-2777
29. Deer Park Spring Water 1-800-325-3337
30. Diamond Springs Water, Inc.
    Richmond, Virginia
    (804) 222-5100

0. Eagle Springs, Inc.
Hanover, Virginia
(804) 746-5419
1. ECO Water of West Virginia 1-800-985-2000
2. First Choice Water Company
Chesapeake, Virginia
(757) 483-2502
3. H2O To Go
Virginia Beach, Virginia
(757) 490-3012
4. H2O To Go
Chesapeake, Virginia
(757) 547-7812
5. H & H Distributing Company
Urbanna, Virginia
(804) 758-4115
6. Handy Bottled Water
Williamsburg, Virginia
(757) 229-7268
7. Hub Water Company
Troutville, Virginia
(540) 992-2005

39, Hydrologix
Chesapeake, Virginia
(757) 548-4564

40. Jim Reid & Associates
Culpeper, Virginia
(540) 825-4244
41. Lawson Water Conditioning
Wise, Virginia
(540) 328-6591
1-800-669-6591
42. Mary K. Plantation Natural Springs
Alexandria, Virginia
(703) 549-0990
43. Mc New Culligan Water Treatment
Fredericksburg, Virginia
(540) 786-9481
44. Mc New Culligan Water Treatment
Richmond, Virginia
(804) 236-9030
45. Miller's Spring Water, Inc.
Chesapeake, Virginia
(757) 485-3200
46. Mountain Springs
Roanoke, Virginia
(540) 982-0944
47. Nature's Best Spring Water Company
Bristol, Virginia
(540) 466-9511
48. New Post Market
Fredericksburg, Virginia
(540) 373-0290
49. Polar Water Company
Spring Grove, Virginia
(757) 866-8921
50. Polar Water Company
Spring Grove, Virginia
(757) 866-8924
51. Polar Water Company
1-800-235-7873
52. Pure Water Company
Manassas, Virginia
(703) 361-7738
53. Pure Water World
Chesapeake, Virginia
(757) 548-8741
54. Quality First Food & Beverage
Danville, Virginia
(804) 797-6705
55. Quibell Corporation
Roanoke, Virginia
(540) 344-0100
56. R.L. Hawkins
Vinton, Virginia
(540) 890-1023
(540) 772-8695
57. Reston Office Supply, Inc.
Reston, Virginia
(703) 860-0244
58. Shamrock Springs Water Company
Richmond, Virginia
(804) 266-5050
59. Shawnee Water Service
Greenville, Virginia
(540) 337-1027
60. Shenandoah Valley Water Company
Roanoke, Virginia
(540) 342-5361
1-800-728-4326
61. Shenandoah Valley Water Company
Staunton, Virginia
(540) 885-8041
62. Street & Company
Richmond, Virginia
(804) 261-4979
63. Suburban Distributors
Fredericksburg, Virginia
(540) 372-3483
64. Sweet Springs Valley Water Company
Cap Mills, West Virginia
(304) 772-3201

65. Tidewater Bottling Company
Newport News, Virginia
(757) 596-3601
66. Tinkerview Water Company
Troutville, Virginia
(540) 992-2005
67. Virginia Ozone Pure Water
Virginia Beach, Virginia
(757) 426-3544
68. Virginia Water Improvement Company
Charlottesville, Virginia
(804) 978-2976
69. Water & Health
Chesapeake, Virginia
(757) 545-5845
70. Water & Health
Newport News, Virginia
(757) 872-7592
71. Water & Health
Virginia Beach, Virginia
(757) 431-2522
72. Water Hut
Chesapeake, Virginia
(757) 548-2190
73. Water Hut
Virginia Beach, Virginia
(757) 523-1773
74. Water Hut
Virginia Beach, Virginia
(757) 631-8852
75. Water Inc. of Virginia
Richmond, Virginia
(804) 288-8449
76. Water Plus
Norfolk, Virginia
(757) 466-7293
77. Water Spot
Virginia Beach, Virginia
(757) 473-9757
78. Woody's Water Service
Stephenson, Virginia
(540) 667-2755

B. Water Hauling Vendors

1. VDOC Water Tank Truck
Baskerville Correctional Unit
4 (804) 447-3191
2. A Plus Water Hauling
Charlottesville, Virginia
(804) 981-3146
31. Baker Tank Rental
Richmond, Virginia
(804) 233-9900
32. Bell Transport, Inc.
Chantilly, Virginia
(703) 327-4867
33. Bollingbrook Water Hauling Company
Petersburg, Virginia
(804) 862-3802
34. C&D Water Hauling
(540) 269-2532
35. Gill Oil
Richmond, Virginia
(804) 233-5444
36. Loudon Milk Transportation
Purcellville, Virginia
(540) 338-7156
37. Maddow Water Service
Staunton, Virginia
(540) 337-4778
38. Marks Hauling Service
Stuarts Draft, Virginia
(540) 337-4778
39. Palm Pools
Woodbridge, Virginia
(703) 670-5200
40. Rain For Rent Tank Rentals
Hopewell, Virginia
(804) 458-4590
41. Townsend Company
Manakin Sabot, Virginia
(804) 749-3835
42. Water Transport of Virginia
Glen Allen, Virginia
(804) 798-4344

C. Portable Toiler Vendors

1. AAA Porta-Toilet Rentals
Pine Creek, Virginia
(540) 926-4289
2. A&S Porta-A-Poti
Tazewell, Virginia
(540) 988-8110
3. Albermarle County Disposal TRSH
Charlottesville, Virginia
(804) 295-9761
4. Allied Ready Mix, Inc.
Waynesboro, Virginia
(540) 949-8386
5. Ar-Jons
Bienna, Virginia
(703) 281-3202

3. **Area Container Service**
   Chesapeake, Virginia
   (757) 543-2388
4. **Belvins Septic Tank Service**
   Lebanon, Virginia
   (540) 794-9668
5. **B&D Porta-Potties**
   Stephens City, Virginia
   (540) 869-3987
6. **B L Cubbage & Son, Inc.**
   Madison, Virginia
   (540) 948-3304
7. **BFM Port-A-John**
   Prince George, Virginia
   (804) 458-4597
8. **Bushrod Disposal Service**
   King George, Virginia
   (540) 775-7396
9. **Butler & Eicher Septic Cleaning**
   Bealeton, Virginia
   (540) 347-2274
10. **C&R Septic Company, Inc.**
    Colonial Beach, Virginia
    (804) 224-5119
11. **C 0 Philpotts Company**
    Norfolk, Virginia
    (757) 587-4275
12. Churchill's Portble Toilets
    Martinsville, Virginia
    (540) 632-2820
13. Cline Associates, Inc.
    Weyers Cave, Virginia
    (540) 234-9333
14. Cluster Springs Sanitary Service
    Cluster Springs, Virginia
    (804) 572-6098
15. Crystan Kleen-Rite Service
    South Boston, Virginia
    (804) 572-8197
16. Discount Portable Toilets
    Madison Heights, Virginia
    (804) 929-2323
17. Don's Johns
    Chantilly, Virginia
    (703) 273-7100
18. Edmonds Waste Removal, Inc.
    McKenny, Virginia
    (804) 478-4688
19. Essential Systems, Inc.
    Kilmarnock, Virginia
    (804) 435-1066
6. Eure Equipment Rental
   Chesapeake, Virginia
   (757) 424-9797
7. H.L. Vaught Septic Tank Cleaning
   Ripplemead, Virginia
   (540) 921-1460
8. Handy John
   Martinsville, Virginia
   (540) 638-5240
9. Handy's Porta-A-John
   Collinsville, Virginia
   (540) 647-3016
10. Haynes Portable Toilet
    Pulaski, Virginia
    (540) 980-7510
11. Haynes Portable Toilet & Service
    Galax, Virginia
    (540) 236-6962
12. Haynes Portable Toilet Service
    Christiansburg, Virginia
    (540) 382-4472
13. J.C. Trash Service & Recycling
    Charlottesville, Virginia
    (804) 979-7643
31 Jobsite Johnny
   Atkins, Virginia
   (540) 783-7774
32. John Boy Company
    Lorton, Virginia
    (703) 339-5555
33. Johnny Blue, Inc.
    Winchester, Virginia
    (540) 665-0968
34. Johnny On The Spot
    Lebanon, Virginia
    (540) 794-9668
35. Johnny On The Spot
    Sutherland, Virginia
    (804) 733-6292
36. Kgd, Inc.
    Harrisonburg, Virginia
    (540) 4349500
37. Kgd, Inc.
    Staunton, Virginia
    (540) 886-4954
38. Kgd, Inc.
    Staunton, Virginia
    (540) 949-7979
39. Montgomery Septic tank Service
    Christiansburg, Virginia
    (540) 382-2205

20. **Mo-Johns**
    Cartersville, Virginia
    (804) 375-3050
    1-800-440-6116
21. **Oliver Stiff Septic Tanks**
    Prospect, Virginia
    (804) 574-6237
22. **Outhouse Toilet Rental & Septic Service**
    Floyd, Virginia
    (540) 745-3519
23. **Phil Carter System, Inc.**
    Newport News, Virginia
    (757) 244-4903
24. **Rich Lite, Inc.**
    Richmond, Virginia
    (804) 321-1395
25. **Portable Sanitation**
    Richmond, Virginia
    (804) 330-8020
26. **Port-O-Let Service**
    Richmond, Virginia
    (804) 233-5052
27. **Porta-John & Septic Serivce**
    South Boston, Virginia
    (804) 572-8197
28. **Roanoke Portable Johns**
    Roanoke Rapids, North Carolina
    (252) 537-2338
29. **Roto Rooter**
    Staunton, Virginia
    (540) 463-1633
30. **S.B. Cox, Inc.**
    Richmond, Virginia
    (804) 222-3500
31. **Sanitation Management Corporation**
    Hartwod, Virginia
    (540) 752-5000
32. **Scotts Systems**
    Chantilly, Virginia
    (703) 263-9038
40. **Septic Service**
    Wise, Virginia
    (540) 926-4289
41. **Shore Disposal**
    Painter, Virginia
    (757) 336-3659
42. **Shore Disposal Co.**
    Painter, Virginia
    (757) 442-6070
43. **Sowers & Austin, Inc.**
    Floyd, Virginia
    (540) 745-2481
44. **Spivey Tentals & Safety, Inc.**
    Hampton, Virginia
    (757) 722-2533
45. **Spivey Rentals, Inc.**
    Chesapeake, Virginia
    (757) 485-8888
46. **Tidy Services**
    Roanoke, Virginia
    (540) 345-0168
47. **Tom's Septic Service**
    James Store, Virginia
    (804) 693-5052
48. **Valley Portable Toilets**
    Broadway, Virginia
    (540) 434-8810
49. **W.C. Lowery, Inc. Septic Tanks**
    Callao, Virginia
    (804) 462-5240
50. **Waste Management,**
    Inc. Chesapeake,
    Virginia (757) 485-5700
51. **Williams Construction Service**
    Boydton, Virginia
    (804) 738-0405
52. **Wilson's Septic Tank Service**
    Lynchburg, Virginia
    (804) 239-4387
53. **Y & Y Portable Toilet Service**
    Wise, Virginia
    (540) 328-8345

MITIGATION PLAN

DEQ GROUNDWATER WITHDRAWAL PERMIT NO. GW0040102

OWNER NAME: Virginia Department of Corrections

FACILITY NAME: St. Brides Correctional Center

LOCATION: 701 Sanderson Road, Chesapeake, Virginia 23328-6482

INTRODUCTION

On June 7, 2021, the Virginia Department of Corrections (VADOC) submitted a Groundwater Withdrawal Permit Application to the Virginia Department of Environmental Quality (DEQ) to withdraw groundwater. Groundwater withdrawals associated with this permit will be utilized to provide the following beneficial water uses at St. Brides (SBCC) and Indian Creek (ICCC) Correctional Centers.

- Showers, restrooms, cooking, dishwashing, ice-making, and drinking water for inmates, correctional officers, and other staff;
- Restrooms and drinking water in the administration and maintenance building;
- Fire suppression;
- Washing of the augers at the SBCC and ICCC sewage pumping stations;
- Restrooms, drinking water, and cleaning at the WWTP;
- Restrooms, drinking water, cleaning, filters backwash and RO reject water at the WTP;
- Heating via boiler systems for SBCC and ICCC;
- Janitorial / cleaning services throughout both institutions;
- Laundry: one small commercial and approximately 54 household washing machines throughout SBCC and ICCC;
- Occasional vehicle washing;
- Some landscape watering (shrubs and flowers); and
- Virginia Correctional Enterprise (VCE).

The purpose of this Mitigation Plan is to provide existing groundwater users a method to resolve claims that may arise due to the impact of the withdrawal from St. Brides Correctional Center well field. Predicted drawdown of water levels due to the withdrawal(s) from the Yorktown-Eastover aquifer are shown in the attached maps(s).

Modeled impacts, as shown on the attached maps, extend beyond the boundary of the St. Brides Correctional Center facility. Due to these findings, VADOC recognizes that there will be a rebuttable presumption that water level declines that cause adverse impacts to existing groundwater users within the area of impact are due to this withdrawal. Claims may be made by groundwater users outside this area; however, there is a rebuttable presumption that VADOC St. Brides Correctional Center has not caused the adverse impact. VADOC proposes this plan to mitigate impacts to existing users and excludes impacts to wells constructed after the effective date of this permit.

CLAIMANT REQUIREMENTS

To initiate a claim, the claimant must provide written notification of the claim to the following address:

Contact Name:	Timothy G. Newton
Title:	Infrastructure and Environmental Management Unit (IEMU) Director
Permittee Name:	Virginia Department of Corrections
Address:	6900 Atmore Drive
City, State Zip Code	Richmond, Virginia 23225

The claim must include the following information: (a) a deed or other available evidence that the claimant is the owner of the well and the well was constructed and operated prior to the effective date of the permit; (b) all available information related to well construction, water levels, historic yield, water quality, and the exact location of the well sufficient to allow VADOC to locate the well on the claimant's property; (c) the reasons the claimant believes that the St. Brides Correctional Center withdrawal has caused an adverse impact on the claimants well(s).

CLAIM RESOLUTION

VADOC will review any claim within **five (5) business days.** If VADOC determines that no rebuttal will be made and accepts the claim as valid, VADOC will so notify the claimant and will implement mitigation within **thirty (30) business days.** If the claim is not accepted as valid, VADOC will notify the claimant that (a) the claim is denied **or** (b) that additional documentation from the claimant is required in order to evaluate the claim. Within **fifteen (15) business days** of receiving additional documentation from the claimant, VADOC will notify the claimant (a) that VADOC agrees to mitigate adverse impacts or (b) the claim is denied. If the claim is denied, the claimant will be notified that the claimant may request the claim be evaluated by a three (3) member committee. This committee will consist of one (1) representative selected by VADOC, one (1) representative selected by the claimant, and one (1) representative mutually agreed upon by the claimant and VADOC.

Any claimant requesting that a claim be evaluated by the committee should provide the name and address of their representative to VADOC. Within **five (5) business days** of receipt

of such notification, VADOC will notify the claimant and claimant's representative of the identity of VADOC's representative and instruct the representatives to select a third representative within ten (10) business days. Representatives should be a professional engineer or hydrogeologist with experience in the field of groundwater hydrology. VADOC agrees to reimburse the members of the committee for reasonable time spent, at a rate prevailing in the area for experts in the above listed fields, and for direct costs incurred in administering the plan. The claimant may, at his or her option, choose to provide the reimbursement for the member of the committee selected by the claimant and up to half of the reimbursement for the mutual representative.

Within ten (10) business days of selection of the third representative, the committee will establish a reasonable deadline for submission of all documentation it needs to evaluate the claim. Both the claimant and VADOC will abide by this deadline.

Within fifteen (15) business days of receipt of documentation, the committee will evaluate the claim and reach a decision by majority vote. The committee will notify the claimant regarding its decision to (a) deny or (b) approve the claim. If the claim is approved, VADOC will mitigate the adverse impacts within thirty (30) business days of making the decision or as soon as practical. If the claim is denied by the committee, VADOC may seek reimbursement from the claimant for the claimant's committee representative and one half of the 3rd representative on the committee.

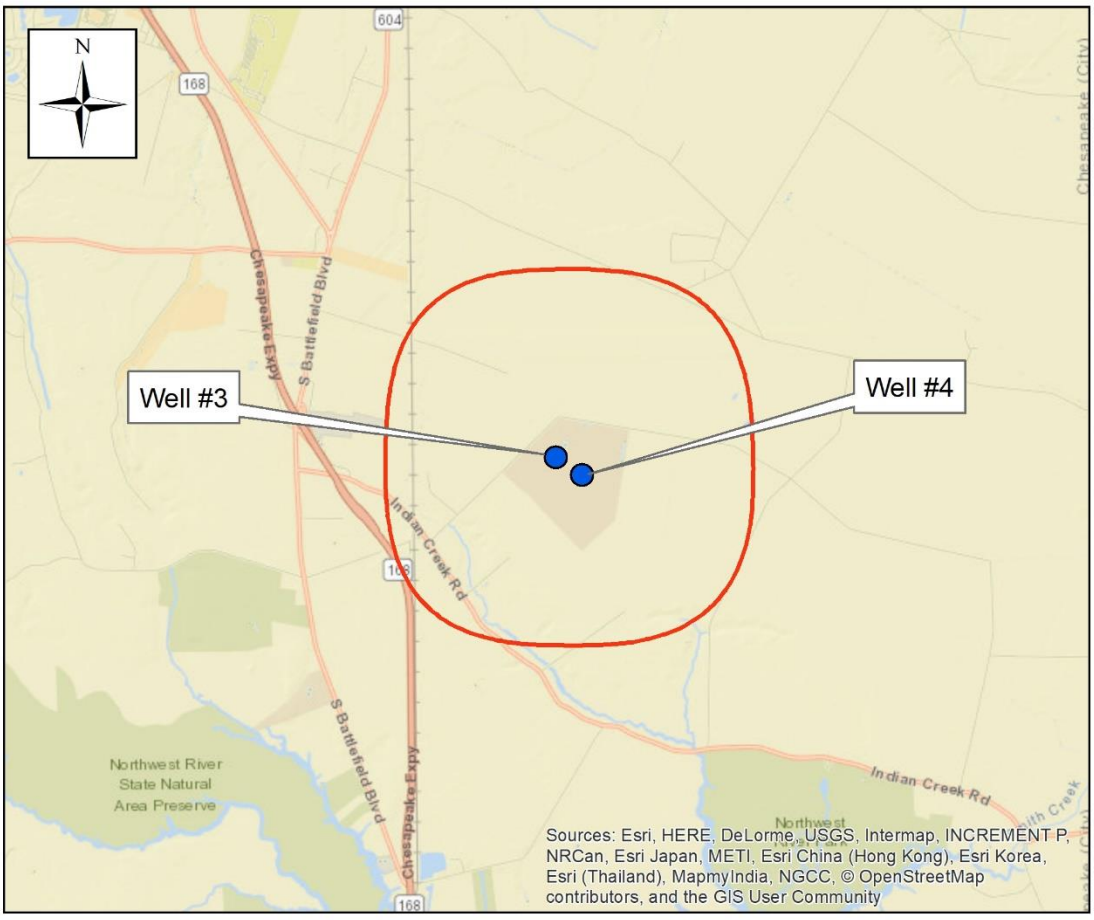
If a claimant within the indicated area of impact indicates that they are out of water, VADOC will accept the responsibility of providing water for human consumptive needs within seventy-two (72) hours and to cover the claim review period. VADOC reserves the right to recover the cost of such emergency supply if the claim is denied by VADOC or found to be fraudulent or frivolous. If VADOC denies a claim and the claimant elects to proceed with the three (3) member committee, VADOC will continue the emergency water supply at the claimants request during the committee's deliberations, but reserves the right to recover the total costs of emergency water supply in the case that the committee upholds the denial of the claim. Similarly, VADOC reserves the right to recover costs associated with the claim process if a claim is found to be fraudulent or frivolous.

If it is determined by the committee or shown to the committee's satisfaction that a well operating under a mitigation plan similar to VADOC's St. Brides Correctional Center’s Plan other than those owned and operated by VADOC has contributed to the claimed adverse impact, VADOC share of the costs associated with mitigation will be allocated in proportion to its share of the impact. Such a determination shall be made by the committee after notification of the third party well owner, giving the third party well owner opportunity to participate in the proceedings of the committee.

PLAN ADMINISTRATION

Nothing in the Plan shall be construed to prevent the Department of Environmental Quality Staff from providing information needed for resolution of claims by the committee.

St. Brides and Indian Creek Correctional Centers
Area of Impact - Yorktown-Eastover Aquifer



St. Brides and Indian Creek Correctional Centers Wells

Yorktown-Eastover AOI

Yorktown-Eastover Aquifer Critical Cells

0 0.5 1 2 Miles

Simulated drawdown at or exceeding one foot in the Yorktown-Eastover aquifer resulting from a 50 year simulation of 122,000,000 gallons per year from the Yorktown-Eastover aquifer using the VAHydroGW-VCPM.

Maximum radius of one-foot drawdown (Area of Impact) occurs approximately 1.3 miles from the pumping center.

Technical Evaluation performed by Aquaveo, LLC for the Virginia DEQ, Office of Water Supply Planning
March 17, 2023

DEQ
VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY